

A network diagram background consisting of numerous yellow circular nodes connected by thin blue lines, set against a dark blue gradient background.

LF Edge TAC Technical Advisory Council

27 January 2021

 THE **LINUX** FOUNDATION

 **LF** EDGE

Meeting Details

- › January 27, 2021 (@ 7:00am PST)
- › Meeting Info:
 - › Meeting URL: <https://zoom.us/j/94796108342?pwd=VjlaMTBxcXFOQ3pVcU85NTJvWkxaZz09>
 - › Calendar Subscription: <https://lists.lfedge.org/g/TAC/calendar>

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LF Edge TAC

Project/Member	Representative	Named Alternate	Project/Member	Representative	Named Alternate
Altran	Shamik Mishra	Nilanjan Samajdar	HP Inc.	Henry Lau	
Arm	Reed Hinkel	Tina Tsou	Huawei	JianGuo Zeng	Gabriel Yuyang
AT&T	Kaustubh Joshi (KJ)		IBM	Joseph Pearson	Ryan Anderson
Baidu	Leding Li		Intel	Jim St. Leger (TAC Chair)	Sharad Mishra
Charter	Jeffrey Saelens	Mohammad Zebetian	Nokia	Tapio Tallgren	
Dell	David Lake	Trevor Conn	NTT	Takeshi Kuwahara	
Dianomic	Mark Riddoch	Tom Arthur	OSIsoft	Daniel Lazaro	
Equinix	Justin Dustzadeh		Radisys	Adnan Saleem	Prakash Siva
Ericsson	Torbjörn Keisu	Andrew Wilkinson	Red Hat	Anil Vishnoi	Thomas Nadeau
Fujitsu	Toshimichi Fukuda	Hatsumi Iino	Samsung	MyeongGi Jeong	Chi-Hyun Cho
Futurewei	Chaker Al-Hakim	Jane Shen	Tencent	Yachen Wang	Wei Chen

LF Edge TAC

Project/Member	Representative	Named Alternate	Project/Member	Representative	Named Alternate
Western Digital	Jorge Campello De Souza		Akraino	Tina Tsou	Oleg Berzin
Wipro	Subhas Mondal		EdgeX Foundry	Henry Lau	
ZEDEDA	Erik Nordmark	Roman Shaposhnik			

Topics

1. Open Horizon: Stage 2 Proposal [30 minutes]
2. LF Edge Shared Community Lab [10 minutes]
3. Upcoming Events / Next Meeting

Open Horizon: Stage 2 Proposal

Joe Pearson, IBM

Open Horizon: Stage 2 Proposal

- › Proposal: <https://wiki.lfedge.org/pages/viewpage.action?pageId=34341347>
- › Timeline/Next Steps ([Process](#)):
 - › Thursday, January 21, 2020: Proposal [emailed to TAC](#)
 - › Wednesday, January 27: TAC Presentation
 - › --2 Week Review Period (ending Wednesday, February 10)
 - › During this review period, a TAC subgroup may be formed to review the project proposal in more detail. Following their review, the TAC subgroup will provide a readout at the next TAC call. While the TAC will strive to complete project reviews within 2 weeks, the subgroup may request up to 2 additional weeks for review if deemed necessary. Following the review period, which will run for a maximum of 4 weeks, the Linux Foundation will notify the TAC that the Project is eligible for a vote. To set the vote in motion, a member of the Technical Advisory Council will need to raise a motion. Following a second, the TAC will vote to recommend either accepting or declining the proposal, and provide feedback where necessary. If no motion is received within 2 weeks, then the project will need to re-apply once a TAC sponsor who agrees to raise a motion is identified. If declined, the proposed project's TAC sponsors will work with the prospective project on next steps, which may include working with the TAC subgroup to refine and re-submit proposal for another TAC vote. If a new, incoming project is declined a second time, the project will need to wait 12 months before re-applying. If approved by the TAC, the Project will move to a vote of the Board (Board's Strategic Planning Committee (SPC) for Stage 1 Projects). If approved by the Board (SPC for Stage 1 Projects), official project on-boarding can begin. (reference)
 - › Acceptance criteria for Stage 2: Receive a two-thirds vote of all TAC representatives that do not abstain the vote and a majority vote of the Governing Board to move to Growth Stage.

Compliance with At Large requirements

Requirement	Evidence
Two TAC sponsors	@ Joe Pearson (IBM), @ Jim St. Leger (Intel), Anil Vishnoi (Red Hat), @ Henry Lau (EdgeX Foundry)
Presentation to the TAC	Original presentation deck and recording from March 11, 2020
IP Policy: licenses for code and documentation, DCO for contributions	<ul style="list-style-type: none">• Primary and all other code repositories use Apache 2.0 license• Documentation uses CC-BY-4.0 International license• DCO is mandatory for all repositories, commit check automatically enforced
List project (Stage One) status on web site or README	Updated LF Edge project page to reference (thanks, Brett!)
>= 2/3 approval vote of TAC & majority of Governing Board SPC	<ul style="list-style-type: none">• TAC two-thirds vote approval reached on March 30, 2020.• Governing Board Strategic Planning Committee approval reached on April 9, 2020. link to page

Compliance with Growth requirements

- Development of a growth plan (to include both roadmap of projected feature sets as well as overall community growth/project maturity), to be done in conjunction with their project mentor(s) at the TAC.
- Document that it is being used in POCs.
- Demonstrate a substantial ongoing flow of commits and merged contributions.
- Demonstrate that the current level of community participation is sufficient to meet the goals outlined in the growth plan.
- Demonstrate evidence of, or a plan for, interoperability, compatibility or extension to other LF Edge Projects. Examples may include demonstrating modularity (ability to swap in components between projects).
- Since these metrics can vary significantly depending on the type, scope and size of a project, the TAC has final judgement over the level of activity that is adequate to meet these criteria.
- Receive a two-thirds vote of all TAC representatives that do not abstain the vote and a majority vote of the Governing Board to move to Growth Stage.

Used in POCs

Requirement:

Document that it is being used in POCs.

Evidence:

1. DLR in Germany has created two pieces of hardware (GeoBox, HofBox) for farmers, and is proposing to work across the country in a public/private partnership program. This technical project uses Open Horizon as a key component for their offline-first approach to edge computing.
[video link \(in German\)](#)
2. Foxconn Industrial Internet has ported the Open Horizon agent to work on their 5G AI Box and is using it as an integral piece of their vertical farming solution - MES Agricultural System. It will be initially featured in their Beijing Client Demo Center.
[Google Drive video](#)
3. I could list a few other PoCs, but they use a commercial downstream distribution, so I'm not sure if they're valid examples. For instance, the Port of Barcelona is using it in an MVP to detect and identify boats (and their bow and stern) approaching the harbor, and is using deployed inferencing algorithms to derive the location/position of those boats, all being inferred on the edge.
link: <https://es.newsroom.ibm.com/announcements?item=122614>

Substantial ongoing commits and contributions



Source: <https://tinyurl.com/y2bfot3g>

Over 2020 calendar year

- 10 [Active repositories](#)
- 38 Contributors
8 are new volunteers
- 1,171 Commits

Oct 2, 2016 – Jan 21, 2021

Agent

Contributions: Commits ▾

Contributions to master, excluding merge commits

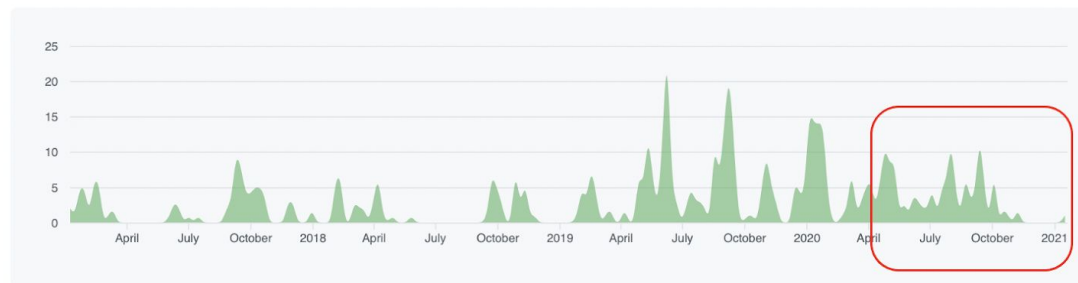


Jan 8, 2017 – Jan 21, 2021

Management Hub

Contributions: Commits ▾

Contributions to master, excluding merge commits



Community participation meets growth plan goals

Growth plan for 2020:

- Regular, scheduled TSC and Working Group meetings with active public community participation in Working Groups
Met
- Three active SIGs meeting and supporting users and solutions
Partially Met: Created two SIGs (Manufacturing and Smart Agriculture), and the Open Retail Reference Architecture (ORRA) sub-project
- Active effort underway with three or more partner organizations to define Open Deployment standards
Ongoing: Arnaud Le Hors has volunteered to help lead this effort, will begin with standards around ORRA
- At least twenty new active (volunteer) contributors
Missed: 8 new contributors, not 20
- At least two Partner companies contributing value to the project
Met: Foxconn Industrial Internet and SoftServe
- Apply for Stage Two maturity project
In Progress
- Investigate opportunities for collaboration with universities
Ongoing

Growth plan for 2021

- Add non-IBM voting members to the TSC (at least 30%)
- Add 20 or more active volunteer contributors
- Add three project partners contributing value
- Bring two new members to LF Edge
- Create a project web site
- Mentor twelve new candidates
- Establish ties with at least one university
- Publish the beta release of the Open Retail Reference Architecture
- Launch the Open Edge Services Catalog

Evidence of interoperability, compatibility w/projects

1. Open Horizon and SDO hosted a joint demo at ONES-NA last September. Open Horizon integrates SDO rendezvous services into the management hub and CLI since SDO 1.8, and is continually upgrading that support as new SDO releases come out. Open Horizon now supports SDO 1.9.1. Open Horizon also has a technical and project liaisons to the SDO project.
2. Open Horizon is almost complete with integration into EdgeX Foundry's Sensor Fusion demo, which also updates Open Horizon's EXF integration work. We're participating in their Kubernetes Support sub-project. And we just announced our participation in the [Open Retail Reference Architecture](#), an EXF Vertical Solutions WG sub-project, which **you're all invited to participate** in as well. We plan to create an Akraino blueprint from this effort.
3. Open Horizon has worked with SOTE by providing project information, updating landscape information, submitting postcards from the edge, and providing a project liaison that regularly attends their meetings.
4. Open Horizon is about to begin collaborating with Fledge on specific deliverables. The TSC just began voting to create a sub-group under the Open Horizon TSC for those efforts.
5. We have plans and ideas about collaborations with EVE and Home Edge, and hope to make further progress on those in 2021.

LF Edge Shared Community Lab

Jim St. Leger

LF Edge Lab

- › Subgroup last met on January 20 to continue iteration of [TAC Subcommittee Charter: LF Edge Shared Community Lab \(notes\)](#)
- › Board voted on January 26 to officially approve the Charter / creation of a Subcommittee of the TAC to oversee operation of the LF Edge Shared Community Lab
- ›
- › **Next Step:** TAC vote to approve/adopt the [Acceptable Usage Policy](#)

- › Next step is updating the LF Edge Wiki
 - › Bringing over information from the Akraino Wiki

- › Next Subgroup meeting scheduled for Wednesday, February 3
 - › Email Brett to be added to invite

LF Edge Lab: Equipment purchase request

- › TAC Subcommittee - Shared Community Lab recommendation to approve purchase request below:
 - › Request to purchase Nexcom IOT gateways, one x86 and one Arm based for the lab. The gateways are in support of the Akraino IOT blueprint family. The x86 unit is \$670, including its power supply, the arm unit is between \$375 and \$600 depending on the configuration (which is being finalized).
 - › Hardware information?
 - › NIFE105 IIoT Gateway (x86)
 - › EBX-601: NXP ARM Cortex-A9 i.MX6
 - › This is not expected to impact lab operations or cost in any way (beyond the purchase).
 - › Approved budget for 2021 included 25k allocation for hardware purchases, such as these devices.
 - › **Next Step:** TAC vote to approve

Upcoming Events

Upcoming External Events

Full list of LF events available at:
<https://events.linuxfoundation.org/>

Additional LF Edge events available at:
<https://www.lfedge.org/events/>

- › [The Linux Foundation Spring Member Meeting](#): 9 March, 2021 - Virtual
 - › [Open Networking & Edge Executive Forum](#): 10-12 March, 2021 - Virtual
 - › [Open Source Summit North America](#): 3-6 August, 2021 - Vancouver, Canada
 - › [Open Source Summit Europe](#): 28 Sept - 1 Oct, 2021 - Dublin, Ireland
 - › [IoT Solutions World Congress](#): 5-7 October, 2021 - Barcelona, Spain
 - › [Open Networking & Edge Summit North America](#): 11-12 October, 2021 - Los Angeles, CA
-
- › Discussions around upcoming events occur in the LF Edge Outreach Committee
 - › Members may subscribe at: <https://lists.lfedge.org/g/outreach-committee>

LF Edge Webinar Series

- › Akraino Edge Stack
 - › Held Thursday, April 2 - [Your Path to Edge Computing with Akraino Edge Stack](#)
 - › On-demand recording available at: https://zoom.us/webinar/register/WN_Zjdo4-5fTOSlqH7pL8iHrO
- › EdgeX Foundry
 - › Held Thursday, April 23 - [EdgeX Foundry 101: Intro, Roadmap and Use Cases](#)
 - › On-demand recording available at: https://zoom.us/webinar/register/4515850788014/WN_xCd6YPjEOrcwLiFhBWPkug
- › Project EVE
 - › Held Friday, May 29 - [Building the “Android of the IoT Edge”](#)
 - › On-demand recording available at: https://zoom.us/webinar/register/6415888722675/WN_35oZl3hrOE69snMailUTPg
- › White Paper
 - › Held Thursday, July 9 - [Demystifying the Edge with the new LF Edge Taxonomy and Framework](#)
 - › On-demand recording available at: https://zoom.us/webinar/register/WN_icv5h6wFTcuw9O0xvMpgLw
- › Fledge
 - › Held Thursday, August 13 - [How Google, OSIssoft, FLIR and Dianomic use Fledge to implement Industrial 4.0](#)
 - › Recording available at: <https://www.youtube.com/watch?v=6jXNv3AIWog>
- › State of the Edge
 - › Held Thursday, September 17 - [State of the Edge: Exploring the Intersection of IoT, AI, 5G and Edge Computing](#)
 - › On-demand recording available at: https://zoom.us/webinar/register/8115959695936/WN_4rt-MmP1RI6Vkzn3ULpiAA
- › Home Edge
 - › Held Thursday, October 15 - [Home Edge: How Your Home Devices Get Deployed in An Edge Computing Services Ecosystem](#)
 - › On-demand recording available at: https://zoom.us/webinar/register/WN_uSlgb-R5O4etkDhxoSXISQ
- › Open Horizon
 - › Held Thursday, November 19 - [Secure Application Management for Machine Learning & Constrained Devices](#)
 - › On-demand recording available at: https://zoom.us/webinar/register/WN_tYli1JZ1RWq1pml8FuPRPw

- › More to follow...

LF Mentorship + LFX Webinar Series

- › LF Live Mentorship Series: Coccinelle: Automating Large-scale Evolution and Bug Finding in C Code
 - › February 2 (7:30am PST) - <https://events.linuxfoundation.org/mentorship-session-coccinelle/>
- › LF Live Mentorship Series: New Ideas for Smatch (Static Analysis)
 - › February 11 (8:30am PST) - <https://events.linuxfoundation.org/mentorship-session-smatch/>
- › LF Live Mentorship Series: Dynamic Program Analysis for Fun and Profit
 - › February 25 (7:30am PST) - <https://events.linuxfoundation.org/mentorship-session-dynamic-program-analysis/>
- › LF Live Mentorship Series: Which Hat Do I Wear Today? The Balancing Act of Working with Upstream and Product Teams
 - › February 25 (9:30am PST) - <https://events.linuxfoundation.org/mentorship-session-which-hat-do-i-wear/>
- › LF Live Mentorship Series: Fuzzing Linux Kernel
 - › March 2 (7:30am PST) - <https://events.linuxfoundation.org/mentorship-session-fuzzing-linux-kernel/>
- ›
- › Join the LF Live: Mentorship Series mailing list and be alerted when new sessions are added!
 - › Sign up available at the bottom of <https://events.linuxfoundation.org/lf-live-mentorship-series/>
- › Full list of LF Webinars (upcoming/recorded) available at <https://linuxfoundation.org/webinars/>

Linux Foundation edX and Training Courses

- › Business Considerations for Edge Computing:
<https://www.edx.org/course/business-considerations-for-edge-computing>
- › Getting Started with EdgeX Foundry (LFD213):
<https://training.linuxfoundation.org/training/getting-started-with-edgex-foundry-lfd213/>
- › Full list of courses available at <https://training.linuxfoundation.org/>

Upcoming Project Events

- › [Akraïno Technical Meetings - Spring](#): 1-3 March, 2021 - Virtual
 - › Registration now open: <https://events.linuxfoundation.org/akraïno-technical-meetings-spring/>

- › Projects can add their events to this list by sending the Wiki page listing the information to info@lfedge.org

Next Meeting

Next Meeting

- › Next Meeting: Wednesday, February 10 @ 7am PST
 - › Topics
 - › Open Horizon: Stage 2 Proposal - Subgroup Readout
 - › Akraino R4 Overview (assuming Released)
 - › ...

Thank You

Backup/Resources

Upcoming Release Calendar

- › Reminder to Projects to please review and update as needed
- › <https://wiki.lfedge.org/display/LE/Upcoming+Release+Calendar>

Release dates are subject to change.

For the latest information on each Project's upcoming releases, or access to prior releases, please visit:

- Akraino - <https://wiki.akraino.org/display/AK/Releases>
- Baetyl - <https://github.com/baetyl/baetyl/releases>
- EdgeX Foundry - <https://wiki.edgexfoundry.org/display/FA/Releases> / <https://wiki.edgexfoundry.org/display/FA/Roadmap>
- EVE - <https://github.com/lf-edge/eve/releases> > waterfall release model
- Fledge - <https://github.com/lf-edge-iot/fledge/releases>
- Home Edge - <https://wiki.lfedge.org/display/HOME/Roadmap+and+Release+Notes>
- Open Horizon - Coming Soon
- Secure Device Onboard - <https://github.com/secure-device-onboard/release/releases>
- State of the Edge - <https://github.com/lf-edge/glossary/blob/master/edge-glossary.md>



TAC - Focus Areas for 2020 (what to emphasize / de-emphasize in 2021?)

Target areas identified for the TAC to direct focus, beyond PLD/Project Review

- 1. Architecture (Tech > LF Edge) - Output: TBD (*White paper?*)**
2. APIs Document, Align and Publish
3. SDO/Consortiums expansion
- 4. Forcing function - Use Case or Deployment > Demo across all projects**
5. Technical overlap/unification
6. Cross Project Collaboration
7. IT Efficiencies

Out of Scope for the TAC (for now)

1. Vertical Solutions (End User / SIG Program)
 - a. At Board/SPC level

LF Edge TAC - Focus Areas for 2021: Continued Discussion

- › One idea raised was for deeper (technical) solution briefs around Use Cases and Deployments
 - › Would require commitment (volunteers) from the TAC, Projects, as well as the SPC
- › (from prior discussion) White Papers
 - › LF Edge level or Project level?
 - › General (2020 introduced taxonomy/Projects) or Specific? (e.g. Security, Telemetry)
 - › Who would be the audience?
 - › Post publishing, vehicle for feedback? Success metrics?
- › Other initiatives?
 - › Open Edge Services Catalog - creation and cross-project support
 - › Common way to document APIs for all the projects

Project Resources: Getting Started Checklist

1. <https://wiki.lfedge.org/display/LE/Technical+Project+Getting+Started+Checklist>
2. Best Practices Guide for new, and existing, LF Edge Projects to define/refine/enhance their Project Management
3. Will be sent to Project TSC Leads for additional input / examples
4. Welcome feedback in the TAC as well

CII Best Practices Badge

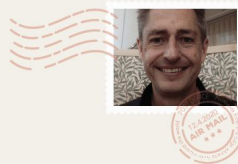
- › Identifies a set of best practices for OSS projects, focusing on security
- › Provides a mechanism for projects to self-certify that they meet these criteria
 - › Automation helps & prevents some false answers
- › Full presentation here:
 - › <https://github.com/coreinfrastructure/best-practices-badge/blob/master/doc/cii-bp-badge-intro.pptx>
- › Website where projects can receive a badge here:
 - › <https://bestpractices.coreinfrastructure.org>
- › EdgeX Foundry, Home Edge and Open Horizon badging already in progress!
 - › <https://bestpractices.coreinfrastructure.org/en/projects/1226>
 - › <https://bestpractices.coreinfrastructure.org/en/projects/4336>
 - › <https://bestpractices.coreinfrastructure.org/en/projects/4300>
- › LF Edge Wiki tracks badge progress here: <https://wiki.lfedge.org/>
- › Proposal: All LF Edge projects be encouraged to get a CII Best Practices badge

State of the Edge - 2021 Report - Postcards from the Edge

And Now, The Time Has Come: 5G and the Edge

We're at a watershed moment in the evolution 5G, the "put-up or shut-up" moment when operators are assessing the commercial value to justify their investment in a 5G buildout. This is what always happens in the marketing and investment dance of a new cellular generation.

Recent research concludes that the full value of 5G is still being discovered, with select operators like [SK Telecom](#) aggressively exploring edge services that can deliver outsized value and demand a premium.



Geoff Hollingworth
CMO, MobileEdgeX

Add Your Voice: info@stateoftheedge.com

Who Will Build and Pay for the Edge ?



Monica Paolini
Principal at Senza Fili

The Data Layer Challenge at the Rapidly Evolving Edge

In the early days of the cloud, visionaries predicted that enterprise infrastructure would quickly migrate to few large cloud providers. Unfortunately, the early cloud hype got ahead of reality—because public cloud faces a huge issue it can't solve on its own: latency. The edge is developing quickly, but the initial emphasis has been on providing compute capabilities, with little thought given to storage.



Ellen Rubin
CEO, Clear Sky Data

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State of the Edge - 2021 Report

LF Edge Project Asks

1. Designate a Liaison

- a. It would be ideal if the each Project could assign a volunteer to be the primary liaison with State of the Edge. This would not require much work, just a conduit for info and coordination. Intro to me directly via email.

2. Align with the Glossary

- a. Now that LF Edge has adopted clear terminology at the top level, we want to work towards aligning the project publications and documentation. Ideally, each Project would formally adopt the [Open Glossary of Edge Computing](#) and ask all its writers and contributors to use it as a style guide.

3. Landscape.

- a. There are probably many LF Edge contributing and supporting companies who have not yet been added to the [LF Edge Landscape](#). I can help with this process, but I need .SVG logos. This is free advertising so it should be easy to incent folks.

4. Postcards from the Edge

- a. Like last year, the 2021 State of the Edge will include outside contributions of 500-1000 words. These need to be educational and not advertorial, but the author and their company will get credit. We will publish an abstract in the 2021 report and run the full essay on the blog.

5. Project Update for State of the Edge

- a. We plan to include a 2-3 paragraph "state of" for each of the LF Edge projects. Please assign somebody to this. We will want to see drafts in early November.

6. Consider fielding and editor

- a. If a Project/Member wishes to have input on the 2021 State of the Edge report, the best way is to find someone willing to be a section editor. This requires reading and commenting on at least one chapter of the 2021 guide, and this will need to be done under fairly tight deadline in November.

Pushed to Next Meeting