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## TAC Voting Members

New members in **bold**

<table>
<thead>
<tr>
<th>Full Name</th>
<th>Account Name</th>
<th>Appointed By</th>
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<td>RTE (Reseau de Transport dElectricite)</td>
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<tr>
<td>FlexMeasures</td>
<td>Nicolas Höning, Seita Energy Flexibility B.V.</td>
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</tbody>
</table>
Working Groups

- Security WG in dormancy pending new focus and leadership
- CI/CD WG in dormancy due to lack of interest
- Annual review for FAWG and DAWG on January 17th, 2022

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Lead</th>
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</thead>
<tbody>
<tr>
<td>Full Architecture WG (FAWG)</td>
<td>Architecture standing committee to develop the overall architecture for LF Energy</td>
<td>Benoît Jeanson, RTE</td>
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<tr>
<td>Data Architecture WG (DAWG)</td>
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<td>Security WG</td>
<td>Working Group on Security</td>
<td>Markus Mirz, RWTH Aachen University</td>
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Agenda

Opening (25 Minutes)
• Summary of last TAC meeting & Updates from the Board Meeting
• Landscape updates
• TAC Sponsors for projects

TAC Business (50 Minutes)
• Hyphae annual review
• EVerest incubation review

Outreach updates (10 Minutes)

Closing and next meeting (5 Minutes)
Summary of last TAC meeting


Updates from the Board
Landscape now with more project info!

We are using the LF Energy Landscape to showcase more project information:

- Mailing List/Slack Channel
- LFX Insights
- SBOM
- Wiki
- TSC Meeting Notes
- Calendar
- Contribution Guidelines

**ACTION:** Project leads please review your entry and ensure it is accurate; issue PR for any changes needed.
The Power of Together

TAC Sponsors for projects

As part of the benefit for LF Energy projects, the TAC has a sponsor for each project.

“Appointment of an existing TAC member by the TAC that will act as a sponsor of the project and provide recommendations regarding governance best practices.”

ASK: Volunteer to be a TAC sponsor for a project

<table>
<thead>
<tr>
<th>Project</th>
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<th>TAC Sponsor</th>
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Hyphae Annual Review
LFE Hyphae: Work status (Incubation stage)

- SONY Computer Science Laboratories
- Single-bus DC microgrid
- Autonomous distributed control
  - Peer-to-peer power exchange between houses with PV+Battery

Lead shift to RWTH (ACS)

Diagram:
- Utility Company
- AC Private Grid
- Transmission / Distribution Line
- Microgrid
- DC Private Grid
- PV + Battery
- DC bus
LFE Hyphae: New work approach

- From single-bus microgrid to multi-terminal microgrid
- From DC microgrid to hybrid AC/DC microgrid connected to AC distribution grid
- Microgrid control as services to distribution grid
- Synergies with LFE SOGNO project
LFE Hyphae: Members

- Temporary lead of LFE Hyphae by RWTH (ACS)

- Results from FEN DC-Sek project
  - RWTH (ACS & PGS)
  - EATON
  - OPAL-RT
  - Kiepe

- Flexible Electrical Networks (FEN) Consortium
- Relevant partners
  - EATON
  - Intra Energy (to join)

- Future lead of LFE Hyphae by EATON

- SONY to be involved again in future
LFE Hyphae: Microgrid control

- Micro-services: Open-source models and scenarios of microgrid control/operation
  - Secondary control – optimisation of operation – energy management
  - Islanding/grid-connection of microgrid – synchronisation of converters
  - Ancillary services to main grid – interactions with DSO/market

AC/DC microgrid
## LFE Hyphae: Time-Plan

- Step 1: System model of AC/DC microgrid
- Step 2: Secondary control (islanded microgrid)
- Step 3: Islanding/grid-connection
- Step 4: Ancillary services to main grid

<table>
<thead>
<tr>
<th>Step</th>
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<tbody>
<tr>
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<td>Step 3</td>
<td>Summer 2023</td>
</tr>
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<td>Step 4</td>
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</tr>
</tbody>
</table>
Thank you for your attention!

Contact:
Asimenia Korompili
Research Associate
Leader FEN DC-Sek Project
Institute for Automation of Complex Power Systems
RWTH Aachen University

akorompili@eonerc.rwth-aachen.de

Image sources (banner)
- Exterior view of building – ©FEN GmbH
- Landscape with wind turbine – ©DDM Company
- DC-DC converter – ©E.ON ERC
- Network – iStockphoto.com/studiovision
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Everest Incubation Review
Core Business
Supporting Services

- Network Model Manager
- Configuration & Validation Tools

Data Exchange Gateways

- IoT Platform
- Network Security Coordination
- Market
- SO Data Exchange

Core Business Supporting Platforms

API (standard interface for accessing and storing the data)

REAL TIME Event Orchestration Layer (Kafka, MQTT, ONAP? etc) [analysis]

Data and Services Platforms - Baikal (OSDU), FIWARE, TimeScale Db, DataBricks, homemade

Edge & Distributed Intelligence

- Multiprotocol Gateway
- EV Gateway
- Data & Services
- Substation Automation and Virtualization

End-User EDGE - Dedicated Operated

Utility Service Provider EDGE - Shared, XaaS
But the Charging Industry Lacks a Unified Ecosystem

No De-facto standards and too many links:

- High Fault-Rate
- Expensive & slow development
- Complex mechanisms to proliferate innovations
- Market fragmentation

Customers and Industry suffering
EVerest Connects Multiple Energy-Services at the Edge

EVerest and its modules (int. com by MQTT)

Electric Grid
Dynamic prices, Forecasts (price, solar, ...)

Home Solar & Batteries
Modbus, SunSpec, EEBus, REST, ...

Other Home Consumption
SG Ready
Load Balancing

Other local Chargers
MQTT, OCPP
IEC 61851, ISO 15118

Car

HMI / User / Apps
MQTT, REST, ...

Cloud / Mgmt / Payment
MQTT, OCPP, REST
EVerest is currently running only with a dedicated HW setup of Pionix, aiming to solve two minimum viable use cases:

1. Smart charging at home
2. Public AC charging with integration of std. OCPP backend

To enable this, we are currently incorporating the following standards and technologies.

- ISO 15118 (AC wired charging, based on existing JAVA stack)
- EN 61851
- OCPP 1.6 (JSON) - Core Profile + Security
- Modbus
- Sunspec
- MQTT framework to easily configure loosely coupled modules
- NFC authentication
- NodeRed integration
- Packetization
- Smart Charging based on energy prices and solar production
- Price API form: aWATTar, Tibber
- Solar forecast API: https://forecast.solar/

Non Code Work:

- Pionix joined LFE ⇒ DONE
- Trademark and domain transfer to LFE ⇒ WIP
EVerest Roadmap

Our vision is that EVerest enables every way of (at least a bit) smart charging, in all situations, from home to Work and even Public AC and DC unidirectional and bidirectional grid friendly charging. Moving forward, we have quite a list of things we want to add, and this is probably far from complete:

- **Prio 1: Web User Interface**
  - For Configuration (Factory, Installation, User)
  - For just end users
  - For display on optional embedded (touch) screens
- **Prio 2: Backend Integration:** [https://www.openchargealliance.org/](https://www.openchargealliance.org/)
  - OCPP 1.6 - all optional profiles
  - OCPP 2.0.1
- **Car Compatibility**
  - Tests with various OEMs
- **Car Communication**
  - ISO 15118-X - all other features (DC, Wireless, Bidirectional, Plug&Charge), rewrite in C++ to reduce compute & memory footprint
  - DC DIN SPEC 70121
  - CHAdeMO
- **Grid integration**
  - ADR [https://www.openadr.org/](https://www.openadr.org/)
  - USEF [https://www.usef.energy/](https://www.usef.energy/)
- **Smart Home Integration:**
  - EEBus [https://www.eebus.org/](https://www.eebus.org/)
  - SG Ready
  - Smart Meter Integration
- **More HW drivers for e.g. Meters, other AC and DC charging controllers**
- **Payment APIs**
- **Portation on HW from different Vendors**
  - To be announced
- **Special Plugins from several Startups**
  - HeyCharge (~offline payment with crypto tokens)
  - BYTERAT (~battery diagnostics)
- **OPEN TO MORE :-)**
Best Practices

- **BadgeApp**
- GitHub CD/CI + Ticket System
  [https://github.com/EVerest](https://github.com/EVerest)
- Static Code Scan:
  [https://app.codacy.com/organizations/gh/EVerest](https://app.codacy.com/organizations/gh/EVerest)
  WIP: (full deployment after going public)
- Key leakage scan
  [https://get.spectralops.io](https://get.spectralops.io)
  WIP: (full deployment after going public)
- Dokumentation
  md + rst + autogenerated from manifests
- Mailing-Lists, Slack, Calendar, TSC
  TSC-scheduled - every 4th Wednesday 17:00 - 18:00 CET starting January
  [https://meet.google.com/gug-mtgq-ujr](https://meet.google.com/gug-mtgq-ujr)
  [https://lists.lfenergy.org/g/everest](https://lists.lfenergy.org/g/everest)

- Going Public: ~ 12th January 2022
  - Git-Repos+Documentation visibility
  - Blog Post
  - TFIR Video Interview
  - Social Media
To be considered for the Incubation Stage, the project must meet the following requirements:

- Have an open and documented technical governance, including:
  - A LICENSE file in every code repository, with the license chosen an OSI-approved license.
  - A README file welcoming new community members to the project and explaining why the project is useful and how to get started.
  - A CONTRIBUTING file explaining to other developers and your community of users how to contribute to the project. The file should explain what types of contributions are needed and how the process works.
  - A CODEOWNERS or COMMITTERS file to define individuals or teams that are responsible for code in a repository; document current project owners and current and emeritus committers.
  - A CODE_OF_CONDUCT file that sets the ground rules for participants’ behavior associated and helps to facilitate a friendly, welcoming environment. By default projects should leverage the Linux Foundation Code of Conduct unless an alternate Code of Conduct is approved prior.
  - A RELEASE file that provides documentation on the release methodology, cadence, criteria, etc.
  - A GOVERNANCE file that documents the project’s technical governance.
  - A SUPPORT file to let users and developers know about ways to get help with your project.
  - Complete and approve the Technical Charter and 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.
  - Have achieved and maintained a Core Infrastructure Initiative Best Practices Badge at the ‘Passing’ level.
  - Have had a successful license scan with any critical issues remedied.
  - Have a defined project mission and scope
  - An overview of the project’s architecture and features defined.
  - A project roadmap defined, which should address the following questions.
    - What use cases are possible now?
    - What does the next year look like in terms of additional features and use cases covered?
  - Community and contributor growth assessment
    - The current number of contributors and committers, and the number of different organizations contributing to the project.
    - Demonstrate a sustained flow of commits / merged contributions
    - A credible plan for developing a thriving user community, in particular expanding the number of committers and contributors?
    - Outline of the plan for the project to complete the requirements for Adopted Stage

- Receive the affirmative majority vote of the TAC.
<table>
<thead>
<tr>
<th>Project</th>
<th>Current Level</th>
<th>Initially Accepted</th>
<th>Last Review Date</th>
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Outreach Updates

- TFIR videos
- Recent press articles
- We want your project news!
  - Doesn’t need to be anything huge!
  - Examples of news:
    - New releases (example https://github.com/powsybl/pypowsybl/releases)
    - New features added
    - New maintainers/organizations involved
    - Upcoming plans
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Next TAC Meeting

The next meeting of the LF Energy TAC is scheduled for 25 January 2022 at 8:00 am US Pacific Time/11:00 am US Eastern Time/5:00 pm Central European Time.

Agenda will include:

- Recap of last TAC meeting/Governing Board updates
- Working Groups annual review

January 4th TAC meeting cancelled due to holidays
Thank you!