CoMPAS project proposal to LF Energy

v1.0 – 24 April 2020

General information

Name of project

CoMPAS - **Co**nfiguration **M**odules for **P**ower industry **A**utomation **S**ystems

Project description (what it does, why it is valuable, origin and history)

The aim of the project is to develop open source software components related to IEC 61850 model implementation (profile management) and configuration of a substation Protection Automation and Control System (PACS).

This open source initiative will:

- leverage multi-vendor and multi-end-user development resources and 61850 competences to accelerate the development of common software blocks
- promote top-down configuration processes and common model implementation choices (thus also accelerate the conformity to IEC 61850 through software implementation)

The project should not duplicate works already carried out in standardization groups. Instead it should aim at delivering a production grade and reference implementation of the standard. When the rules and principles from the standard are not comprehensive enough or subject to interpretation or still work in progress, the project may have to take choices for the implementation. In such case it should strive to a configurable implementation.

Further to a call for collaboration under LF Energy umbrella mid-2019, a Design Team has been established to build an initial roadmap for the project. This Design Team collaborated between November 2019 and April 2020. In April 2020, Alliander, GE, National Grid, RTE, Schneider Electric and TenneT released the initial roadmap for the CoMPAS project under a CC BY 4.0 license.

Project lead

RTE – 3 person initial TSC (2-RTE, 1-GE), they will elect a chair

Project financial sponsor organization(s)

RTE & GE – infrastructure needs not yet clear

Names of other key contributing individuals and organizations

The project will initially involve RTE and GE.
Other parties that may join the project in the course of 2020 (Alliander, National Grid, Schneider Electric) depending on internal approval for the commitment of resources.

Technical Steering Meeting (TSC) members

The initial TSC members of the project are:

- Frédéric Fousseret – RTE (frederic.fousseret@rte-france.com)

Frédéric FOUSSERET is an expert in industrial IT for Substation Automation Systems (SAS). He is currently project manager at RTE, for the specification and design of a chain of configuration tools for new fully digital SAS using IEC 61850 standard (R#SPACE project).
He holds an engineering degree in electronics and signal processing as well as a postgraduate degree in microelectronic circuits and microsystems design.
He began his career 17 years ago as an R&D engineer then R&D project manager for SAS at INEO SCLE SFE (ENGIE subsidiary). During these functions he has participated to the development of Electre "d" system for RTE (French TSO) and PCCN system for ENEDIS (French DSO).
Subsequently, he held various positions of business manager and head of department for SAS factory and site acceptance tests at Fournié Grospaud Synerys (VINCI subsidiary).
He joined RTE in 2015 to bring his experience and work on the design of the next generation of fully digital SAS.

- Stevan Vigouroux – GE (stevan.vigouroux@ge.com)
  Stevan Vigouroux is product Manager for GE Grid Automation Product line. He holds a master degree in engineering and has 15 years of experience in System Engineering and Technical Leadership where he participated in the design and deployment of a variety of automation projects for different industry verticals ranging from utility, transportation, and oil and gas applications to HVDC.
  He has been recognized as an Expert in the GE technical community and is responsible of configuration and management tools and IEC 61850 solutions within GE Control System.
  He participates on innovation projects including digital substation projects worldwide.

- Mohamed Sylla – RTE (mohamed.sylla@rte-france.com)
  Mohamed SYLLA is a senior software development engineer. He has been technical leader in the RTE software development department since 2017.
  Mohamed holds an engineering degree in computational science and applied mathematics.
  Since his beginnings, 10 years ago, Mohamed has worked on scalable distributed application environments as an IT consultant. He has developed and designed applications for a range of industries, for companies of all sizes.

Existing community links

- **Repository hosting:** https://github.com/com-pas
- **Project website and docs:** none for the time being (lfenergy.org/projects/compas) – work on consistency
- **Mailing lists:** to be set up under lists.lfenergy.org
- **Slack, irc:** none
- **Social media accounts:** none
- **Project security plan (TODO - what should this include?):** none
- **Link to code base:** none

Open source status

Please describe the project's license

Code developed by the project will be released under the Apache License, Version 2.0. Documentation will be made available under the Creative Commons Attribution 4.0 International License.

Is this project's code publicly posted? On github or elsewhere?

Code will be posted on: https://github.com/com-pas

Does this project have ongoing public (or private) technical meetings?

Technical meetings have not started yet.

Do this project's community venues have a code of conduct? If so, what is it?

Yes: https://github.com/com-pas/contributing

Describe the project's leadership team and decision-making process.

The project's leadership and governance is documented in the CONTIBUTING file at:
https://github.com/com-pas/contributing
How does collaboration work?
Originally planned for internal development within RTE, next gen digital substation
Aim was to identify who else would benefit & be able/ready to collaborate in an open src project
RTE internal team, GE confirmed similar needs & desire to collaborate
Same with National Grid
Other functional needs not on priority list for RTE but are with others, will make project bigger sooner

Does this project have public governance (more than just one organization)?

Yes.

Does this project have a development schedule and/or release schedule?

No. These will be defined later.
Timeline expectations – RTE, first viable, functional codebase internally within 1 year; GE unknown

Does this project have dependencies on other open source projects? Which ones?

No dependency to date.

Describe the project's documentation

To date the project's documentation consists in the roadmap document:
https://github.com/com-pas/contributing/blob/master/ROADMAP.md

Describe any trademarks associated with the project

None.

Project status

Do you have a project roadmap? please attach

https://github.com/com-pas/contributing/blob/master/ROADMAP.md
specifically geared toward collaboration

Legal entity and/or registered trademarks

None.

Has this project been announced or promoted in any press?

The intention to establish the project has been announced at LF Energy summit and webinars.

Does this project compete with other open source projects or commercial products?

No concurrent open source project has been identified.

There are concurrent commercial products, but we believe that none of them can fulfil the goals stated in the project description above.

What support from the TAC?

- Sharing lessons learned & best practices, so that a new project can grow faster by taking advantage of experience of others
- How should project work, what processes, tools, CI/CD practices, security, process mgmt.
- Speed of development
- Interfaces between projects e.g. between CoMPAS and other projects under LF Energy
    - Identify overlap with other projects – critical to GXF?
    - Leverage functionalities with other projects
    - First need a core to expand
- Role of project re functional architecture with respect to connections w/other areas & projects

Project value

Why would this project be a good candidate for inclusion in LF Energy? / Provide a statement on alignment with the mission in the LF Energy charter.

Due to the Energy Transition the use of power transmission and distribution grids is changing. The control architecture of power grids needs to be swiftly adapted to take account of infeed at lower grid levels, higher dynamics in flow patterns and more distributed controls (both internal controls and grid flexibility services from third parties).

In this context TSOs and DSOs require a new generation of Digital Substation Automation Systems (DSAS) allowing for more dynamic protection settings and adaptative automation functions. Moreover, data management gets significant, both for administration of deployed automation and protection functions as well as operational grid data.

The design of the new DSAS will have to allow for a drastically higher level of modularity, interoperability and scalability compared to the previous generations. An open source collaboration is essential to meet those requirements in a cost-efficient way by sharing the effort through a leveraged development approach that involves all stakeholders from equipment manufacturers to end-users, fostering vendor-agnostic implementations and convergence of utility practices.

What specific need does this project address?

The aim of the project is to develop open source software components related to IEC 61850 model implementation (profile management) and configuration of a substation Protection Automation and Control System (PACS). See the project's roadmap document for details.

The project will deliver software needed to perform the configuration functions at the edge node control level as depicted in the high-level functional architecture of LF Energy.

Describe how this project impacts the energy industry.

This open source initiative will:

- leverage multi-vendor and multi-end-user development resources and 61850 competences to accelerate the development of common software blocks;
- promote top-down configuration processes and common model implementation choices (thus also accelerate the conformity to IEC 61850 through software implementation).

The project should not duplicate works already carried out in standardization groups. Instead it should aim at delivering a production grade and reference implementation of the standard. When the rules and principles from the standard are not comprehensive enough or subject to interpretation or still work in progress, the project may have to take choices for the implementation. In such case it should strive to a configurable implementation.

Describe how this project intersects with other LF Energy projects.

There is currently no major intersection with other LF Energy projects.
Nevertheless, GXF implements the 61850 protocol. Therefore, users of the GXF software for the control and monitoring of 61850 devices could be interested in the outcomes of the project.

Who are the potential benefactors of this project? / What other organizations in the world should be interested in this project?

This project should be interesting for any power utility (grid operator, generation plant) that needs to deploy and manage multi-vendor automation and control systems based IEC61850, as well as T&D vendors selling 61850 devices and integrators of 61850 automation systems.

Project needs

How would this project benefit from inclusion in LF Energy?

In order to reach the ambition of becoming a reference implementation, a proven and attractive governance framework is needed in order to expand the community and achieve a multi-vendor and multi-end-user collaboration. Additionally, LF Energy will bring visibility to the project.

From a technical perspective, the coordination between the project and the overall architecture works will ensure complementarity and interoperability with other software (e.g. automation virtualization platforms, central grid control systems).

Please describe any infrastructure needs or requests (e.g., web hosting).

No specific infrastructure needs foreseen in the near term.

Plan for achieving next maturity level (Incubation -> Early Adoption -> Graduated)

The initial roadmap of the project has identified priorities for the development of a Minimum Viable Product. This MVP should be used in production at RTE and GE within 1.5 to 2 years.

Additionally, discussions are ongoing with other parties that may be able to join the project in the course of 2020 (Alliander, National Grid, Schneider Electric). This would grow the community and expand the functional scope of developments.