

trolley:2.0 for smart cities

CALL FOR TROLLEY 2.0 USER FORUM MEMBERS

Is your city interested in upgrading your trolleybus system or learning about the challenges and opportunities of introducing battery-equipped trolleybuses in your city?

The trolley 2.0 project is currently accepting applications from city authorities and public transport operators in becoming User Forum members to increase their knowledge around battery-equipped trolleybuses and smart trolley grids. User Forum member will be able to participate in the knowledge exchange, workshops, site visits and take-up activities that will be organised as part of the programme.

**Join the Trolley 2.0 project and become a member of
the Trolley 2.0 User Forum!**

Call opening: 3 September 2018

Call closure: 1 October 2018

1. Project scope

Trolley bus systems provide modern zero-emission public transport for urban areas. Even though related infrastructure costs are still high when compared to standard diesel bus lines, trolley buses already perform much better than diesel buses as regards environmental aspects and under certain context conditions, e.g. for high capacity public transport systems, also already in an economic way. Taking these already existing advantages into account, the next step for the advancement of trolleybuses is to integrate battery systems into the trolley buses to achieve a partial independence from the catenary and, thus, achieve an even better economic performance.

Since batteries need to be recharged, carry a large amount of energy and fast-charging did not prove to be the proper recharging approach under the given conditions, it is worth to prospect the characteristics and performance of battery-supported trolley buses and in-motion charging (IMC) concepts. These are able to recharge the battery while operating under the catenary as well as to pass catenary gaps in inner-city districts. The IMC concept is advantageous over fast-charging of pure battery-electric buses as it may result in a larger amount of energy transferred to the battery and in a longer battery life due to the lower charging current. Furthermore, charging the batteries in motion eliminates charging stops and related waiting times leading to a gain in productivity.

For these reasons, the main scope of the Trolley 2.0 project is to prove that battery-supported trolley buses are a way forward towards electric public transport systems in European cities. Therefore, nine partners from public transport, industry and research will demonstrate the new charging strategy IMC that allows for the off-wire operation in remote sections of the network. The work will be carried out in four different European trolleybus cities (Szeged, HU; Eberswalde, DE; Arnhem, NL; Gdynia, PL). These demonstrations will be evaluated and new innovations for smart trolley grids will be demonstrated, e.g. new composite bus frames, automated wiring and de-wiring technologies as well as multi-purpose charging stations based on existing DC infrastructure from trolley networks.

Trolley 2.0 will develop tools, guidelines and recommendations for the design and operation of battery-supported trolley bus services under different context conditions as well as for the development of smart trolley grids becoming a charging backbone for new electro mobility services in cities.

In the following, details on the purpose, activities, eligibility criteria, budget, submission and selection procedures, as well as call timing and deadlines for the Trolley 2.0 User Forum, are described.

2. Call for Applications as User Forum member

This call for applications for the Trolley 2.0 User Forum will invite eight city authorities or public transport operators that are considering the introduction or upgrade of trolleybus systems in their cities. Successful applicants will have the chance to learn about the in-motion charging concept and the challenges and opportunities of integrating battery-equipped trolleybuses as a possibility to achieve a partial independence from the catenary and go off-wire in remote areas of the trolleybus network. The selected User Forum city authorities and public transport operators will benefit from the knowledge exchange, workshops, site visits and take-up activities that will be organised as part of the Trolley 2.0

User Forum. Topics that User Forum members will be able to learn about include the following:

- In-motion charging concept and battery-equipped trolleybuses
- Midi-hybrid-trolleybus as feeder system to extend the existing trolleybus network to remote areas
- Testing of automated wiring and de-wiring technologies
- Multi-purpose trolleybus grids that allow for the charging of other electric vehicles and integration of solar energy
- Stationary energy storage systems and smart energy management of trolleybus grids (e.g. optimised use of recuperation energy, integration of 2nd-life batteries, bilateral energy supply, etc.)

The Trolley 2.0 User Forum will have a runtime from November 2018 to September 2020. The first User Forum will take place in Solingen, Germany on 20 November 2018 in conjunction with the 6th international E-Bus Conference (21/22 November). The preliminary conference agenda can be seen here: <https://www.trolleymotion.eu/konferenz-2018/> Applicants are advised to save the date for the first Trolley 2.0 User Forum meeting in November.

3. Expected activities and outputs

The applicants are requested to actively engage in the discussions that will take place and agree to participate in the following activities and deliver the respective outputs that are part of the Trolley 2.0 User Forum:

Activity	Output	Language
Participation in three Trolley 2.0 User Forums that will focus on different aspects around battery-equipped trolleybuses and smart trolley grids to allow for a targeted knowledge exchange	Online questionnaires as preparation for User Forums	English
Attendance at three Trolley 2.0 partner site visits that will be carried out in conjunction with the abovementioned Trolley 2.0 User Forums	Feedback survey	English
Participation in thematically focused online trainings and webinars on Trolley 2.0 specific aspects	Feedback survey	English
Active contribution to project events, e.g. by giving presentations on trolley-related planned activities in User Forum cities, participating in discussions, etc.	Presentation (only on demand)	English

4. Eligibility criteria

An application for the User Forum must satisfy all of the following eligibility criteria to be retained for evaluation:

- Applicants represent city/ regional authorities or public transport operators from EU member states, countries that are associated to Horizon 2020 (http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/3cp/art/h2020-hi-list-ac_en.pdf) or Belarus (being official partner of the Electric Mobility Europe program).
- The application form is complete in all elements required by the application form.
- The application form is submitted in English (official language of the Trolley 2.0 project).
- The application form is submitted before the deadline: 1 October 2018

Only proposals that satisfy the above listed eligibility criteria are acceptable and will be evaluated by the Trolley 2.0 Coordination Group.

5. Selection criteria

The evaluators - the Trolley 2.0 Coordination Team - will evaluate applications that fully satisfy the eligibility criteria as stated in section 4 according to the motivation of applicants for participating in the User Forum as well as the matching with Trolley 2.0 topical areas and the potential for local application of these.

- **Evaluation Criterion 1:** Motivation and local/regional commitment for the participation in the Trolley 2.0 User Forum. This should be described with existing plans/ strategies on the local level, e.g. as part of existing planning processes/ documents (SUMP, SEAP, electro mobility strategy, etc.).
- **Evaluation Criterion 2:** Matching with Trolley 2.0 topical areas (see comprehensive list in section 2) and the potential for local application, i.e. the anticipated impact which the introduction of the respective Trolley 2.0 concept would have in the applicant's city or region.

6. Budget

The Trolley 2.0 User Forum budget allows for activities with a maximum of 1.800€ per city authority/ public transport operator for the reimbursement of travel and subsistence cost to participate at User Forums and Trolley 2.0 partner site visits (3x 600€). The travel and subsistence cost will be reimbursed on actual cost basis based on the submission of supporting documents and countersigned copies of original receipts, which are due not later than 30 August 2020.

7. Submission and deadline

The Call for Applications will open on 3 September 2018 and close on 1 October 2018. Proposals must utilize the application form and follow the procedures as detailed in the application form. Applications submitted past the deadline or incomplete applications will not be retained for evaluation. Applicants will receive a confirmation e-mail.

Applications meeting all formal requirements are forwarded to the evaluation committee, composed of the Trolley 2.0 Coordination Group.

The evaluation of proposals will be completed within two weeks (10 working days) after the closing date of the Call for Applications.

All applicants for the User Forum will be contacted afterwards. First activities will start from 1st November 2018.

For further information or enquiries please do not hesitate to contact us:

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For more information about the project please refer to <https://www.trolleyemotion.eu/trolley2-0>