



INNOVATIVE
BATTERIES
FOR E-VEHICLES

EIC HORIZON
prize



SOLVE THE CHALLENGE

€ 10 million

Apply by **17 December 2020**

TEMPLATE FOR APPLICATIONS

Administrative form (Part A)

Entry (Part B)

Version 1.0
30 NOVEMBER 2017



**Horizon
2020**

Call:
()

Topic:

Type of action:
()

Proposal

number:

Proposal

acronym:

Deadline Id:

Wherever in this text the term 'proposal' is used, it shall be understood to refer to an 'application'.

Table of contents

Section	Title	Action
1	General information	
2	Contestants & Contacts	

How to fill in the forms

The administrative forms must be filled in for each proposal using the templates available in the submission system. Some data fields in the administrative forms are pre-filled based on the previous steps in the submission wizard.

Proposal ID

Acronym

Acronym is mandatory

1 - General information

Topic

Type of

Call

Deadline

Acronym

Acronym is mandatory

Proposal title

The title should be no longer than 200 characters (with spaces) and should be understandable to the non-specialist

Note that for technical reasons, the following characters are not accepted in the Proposal Title and will be removed:
< > " &

Abstract*

Short summary (max. 2,000 characters, with spaces) to clearly explain:

o Objectives

o Activities

o Type and number of persons benefiting from the project

o Expected results

o Type and number of outputs to be produced

Will be used as the short description of the proposal in the evaluation process and in communications with the programme management committees and other interested parties.

• Do not include any confidential information.

• Use plain typed text, avoiding formulae and other special characters.

If the proposal is written in a language other than English, please include an English version of this abstract in the "Technical Annex" section.

Remaining characters

2000

Proposal Submission

Proposal ID

Acronym

Acronym is mandatory

Declarations

1) In case of several contestants, the lead contestant declares to have the explicit consent of all contestants on their participation and on the content of this application. ☐

2) The information contained in this application is correct and complete. ☐

3) I hereby declare that:

- I have fully read and understood and agree to the official Rules of Contest. ☐

- I am fully eligible and not excluded from participation in accordance with the Rules of Contest. ☐

- All other contestants have confirmed that they are fully eligible and not excluded from participation in accordance with the Rules of Contest. ☐

4) This application complies with ethical principles (including the highest standards of research integrity — as set out, for instance, in the European Code of Conduct for Research Integrity[1] — and including, in particular, avoiding fabrication, falsification, plagiarism or other research misconduct). ☐

According to Article 131 of the Financial Regulation of 25 October 2012 on the financial rules applicable to the general budget of the Union (Official Journal L 298 of 26.10.2012, p. 1) and Article 145 of its Rules of Application (Official Journal L 362, 31.12.2012, p.1) applicants found guilty of misrepresentation may be subject to administrative and financial penalties under certain conditions.

Personal data protection

Your reply to the prize application will involve the recording and processing of personal data (such as your name, address and CV), which will be processed pursuant to Regulation (EC) No 45/2001 on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data. Unless indicated otherwise, your replies to the questions in this form and any

personal data requested are required to assess your prize application in accordance with the specifications of the prize contest and will be processed solely for that purpose. Details concerning the processing of your personal data are available on the privacy statement at the page:

http://ec.europa.eu/dataprotectionofficer/privacystatement_publicprocurement_en.pdf

Contestants may lodge a complaint about the processing of their personal data with the European Data Protection Supervisor at any time.

Proposal ID

Acronym

Acronym is mandatory

2 - Contestants & Contacts

#	Participant Legal Name	Country	Action
1			

Example, not to complete

Proposal ID

Acronym

Acronym is mandatory

Shortname

2 - Administrative data of participating organisations

PIC

Legal name

Short name:

Address of the organisation

Street

Town

Postcode

Country

Webpage

Legal Status of your organisation

Research and Innovation legal statuses

Public bodyunknown

Legal person

.....unknown Non-profitunknown

International organisationunknown

International organisation of European interestunknown

Secondary or Higher education establishmentunknown

Research organisationunknown

Proposal Submission

Proposal ID

Acronym

Acronym is mandatory

Shortname

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and

Titl

Se

☐ Mal

☐ Femal

First

Last

E-

Position in org.

Please indicate the position of the Contact Point above in

Department

Name of the department/institute carrying out the work.

☐

Same as organisation

☐ Same as organisation

Street

Please enter street name and

Town

Please enter the name of

Post code

Area code.

Country

Please select

Websit

Phon

+xxxxxxxxxxxx

Phone

+xxxxxxxxxxxx

Fa

+xxxxxxxxxxxx

Proposal ID

Acronym

Acronym is mandatory

Validation result

Show Error

The red 'Show Error' button indicates an error due to a missing or incorrect value related to the call eligibility criteria. The submission of the proposal **will be blocked** unless that specific field is corrected!

Show Warning

The yellow 'Show Warning' button indicates a warning due to a missing or incorrect value related to the call eligibility criteria. The submission of the proposal **will not be blocked** (proposal will be submitted with the missing or incorrect value).

Section

Description

The form has not yet been validated, click "Validate Form" to do so!

Example, not to complete

TEMPLATE FOR APPLICATIONS

Note: This is for information only.

The definitive templates to be used for submission will be available in the submission system,
which you should then use when writing your application.

Please follow the structure of this template when preparing your application. It has been designed to ensure that the important aspects of your work are presented in a way that will enable the experts to make an effective assessment against the evaluation criteria.

Page limits:

Upon submission, information and documentation regarding the proposed solution must be provided in the application – Part B. The entire part B should not be longer than 70 pages.

A prototype of the solution will only be required at the hearing, for the pre-selected solutions

The page limit will be applied automatically; therefore you must remove this instruction page before submitting.

If you attempt to upload a proposal longer than the specified limit before the deadline, you will receive an automatic warning and will be advised to shorten and re-upload the proposal. After the deadline, excess pages (in over-long proposals/applications) will be automatically made invisible, and will not be taken into consideration by the experts. The proposal is a self-contained document. Experts will be instructed to ignore hyperlinks to information that is specifically designed to expand the proposal, thus circumventing the page limit.

Please, do not consider the page limit as a target! It is in your interest to keep your text as concise as possible, since experts rarely view unnecessarily long proposals in a positive light.

The following formatting conditions apply:

The reference font for the body text of H2020 proposals is Times New Roman (Windows platforms), Times/Times New Roman (Apple platforms) or Nimbus Roman No. 9 L (Linux distributions).

The use of a different font for the body text is not advised and is subject to the cumulative conditions that the font is legible and that its use does not significantly shorten the representation of the proposal in number of pages compared to using the reference font (for example with a view to bypass the page limit).

The minimum font size allowed is 11 points. Standard character spacing and a minimum of single line spacing is to be used.

Text elements other than the body text, such as headers, foot/end notes, captions, formula's, may deviate, but must be legible.

The page size is A4, and all margins (top, bottom, left, right) should be at least 15 mm (not including any footers or headers).

All tables in these sections must be included within this limit. The minimum font size allowed is 11 points. The page size is A4, and all margins (top, bottom, left, right) should be at least 15 mm (not including any footers or headers).

COVER PAGE

Acronym of application:

Title of application:

Category:

List of contestant(s)

Contestant No *	Contestant organization name	Country
1 (Coordinator)		
2		
3		

* Please use the same contestant numbering as that used in the administrative application forms.

Table of Contents

1. ABSTRACT

2. INTRODUCTION

Concept and approach

Describe and explain the overall concept underpinning the proposed solution. Describe potential beneficiaries, added-value compared to existing solutions and the technological input.

3. DETAILED DESCRIPTION OF THE PROPOSED SOLUTION

Describe the proposed solution in detail specifically addressing each of the Award Criteria set out in the Rules of Contest (see also below).

The prize will be awarded to the entry that best addresses the following cumulative criteria:

1. Provides high standards for safety, sustainability and recyclability
2. Provides the same experience and user convenience, in terms of range and time required to recharge, as a conventional gasoline/diesel car)
3. Has whole-life costs (in terms of battery materials and its functionality) equivalent or better than gasoline/diesel car
4. Demonstrates reliable power delivery without significant loss of performance for an economically acceptable life time (power delivery to be demonstrated for a life time higher than batteries currently available)
5. Ensures that other performance criteria (car acceleration, safety, etc.) are maintained in comparison to a combustion engine powered vehicle
6. Demonstrates a significant advance in new material technologies while avoiding dependence on import materials (e.g. expensive, rare, and unsustainable materials)

Both primary, (non-rechargeable) and secondary, (rechargeable), battery system solutions will be evaluated. The prize will be awarded to the entry that best addresses the following cumulative criteria. Where a criterion does not explicitly mention the battery system, this is applicable to both battery system solutions.

1. Provides high standards for safety, sustainability and recyclability;

- a. The battery must be intrinsically safe for the producer, user and the environment. Any issues such as, for example, thermal runaway leading to fire or explosion of the battery should be addressed and eliminated. Any health threat to users, or to workers during the production of the battery, through contact with toxic materials, must be eliminated and this has to be reasonably well demonstrated.
- b. Battery materials should be recyclable and easily dismantled. They should be in line with the framework of a circular and green economy, considering recyclability, durability and sustainability.
- c. The battery must comply with any regulatory framework in place at the closing date for submission.

2. Provides the same experience and user convenience, in terms of range and time required to recharge, as a conventional gasoline/diesel car;

- a. The new battery should allow a driving range of at least 600 km for a standard, state of the art, electric motor driven Euro NCAP small family car.
- b. The battery re-energizing time should be less than 5 minutes. For a secondary battery "re-energizing" means recharging the battery to full capacity at a recharging point (i.e. not during continuous charging as for example through induction or overhead-line charging in the street). Re-energizing should not adversely affect the life time and quality of the battery. For primary batteries re-energising means replacement of the spent battery with a fully charged one at a re-charging station (similar to the process of refuelling a vehicle at a petrol station forecourt)
- c. The battery should allow a performance envelope of the electric powered vehicle that is similar (or better) than a combustion engine powered vehicle, in terms of acceleration, noise, usable temperature range (about -20 to +50 degrees Celsius), use in dry and/or humid conditions, comfort, reliability, under normal road conditions. The battery operating temperature should not hamper the comfort of passengers and should not need the use of energy consuming cooling devices.

3. Has whole-life costs (in terms of battery materials and its functionality) equivalent or better than gasoline/diesel car;

- a. The whole life cycle cost, including consideration of CAPEX and OPEX for the battery, should be market competitive. This has to be shown by respective market studies and market forecast. (For a primary battery the analysis should include battery production, distribution, fitting and recycling/disposal costs)

4. Demonstrates reliable power delivery without significant loss of performance for an economically acceptable life time (power delivery to be demonstrated for a life time higher than batteries currently available);

- a. For a secondary battery, the life time and quality of the battery should guarantee at least an operation of 5 years under normal operating conditions, with a minimum of maintenance and repair. (Normal operating conditions correspond to e.g. the NEDC (new European Driving Cycle) or similar). Life time should be estimated as well as possible, through modelling, calculations and laboratory based accelerated ageing test procedures according to the state of the art available in 2020. Ageing of the battery should be documented/proven according to the best available methods in 2020 and its result should be in line with the aforementioned requirements. The battery must allow a cyclability (which is understood as a cyclic phase of discharge and full recharge) during normal use that permits the attainment of the quality and life time mentioned above. The battery should have a negligible "memory effect" (deterioration of maximum storage capacity over time) and should be able to be recharged from any point of State of Discharge. The European Commission reserves the right to carry out its own testing by an independent laboratory (e.g. the battery testing laboratory of the JRC) to verify durability/lifetime claims made by the proposers.
- b. For a primary battery, a shelf-life of minimum 2 months with negligible leakage of charge should be demonstrated and the swapping mechanism (to be installed in the vehicle) should guarantee a safe and reliable operation for at least 5 years.

- 5. Ensures that other performance criteria (car acceleration, safety, etc.) are maintained in comparison to a combustion engine powered vehicle,**
- a. The battery should be reasonably lightweight, in order to allow the mounting in a standard state of the art electric driven Euro NCAP small family car, without necessitating cost intensive weight reduction measures to be applied to the car body, or significant upgrades to braking and suspension systems to compensate for the additional battery weight.
 - b. For a secondary battery, it should be demonstrated that when necessary, this is easily accessible and/or dismountable from the electric vehicle for repair
- 6. Demonstrates a significant advance in new material technologies while avoiding dependence on import materials (e.g. expensive, rare, and unsustainable materials);**
- a. The battery should, to a great extent, be made of materials available in Europe, using as few as possible rare earths and critical raw materials, or materials that are non-abundant, and not easily available in the EU, in order to avoid materials supply shortage. The materials should be helping to implement a competitive European battery value chain and allow vertical integration in the value chain from the materials to the final electric vehicle
 - b. The CO₂ balance of the production of the battery should be as low as possible and provided through a detailed analysis.