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Inhalte

1. /HORIZON EUROPE/ Embedding smart functionalities into battery cells, deadline: 06. September 2022 17:00 Brussels time

Batteries are operating in different conditions and although preventive approach during battery operation is a must, we need to develop curative functionalities which would enable battery operation in different non-ideal conditions while being transparent through the nasty chemical environment of the cell. Smart functionalities with sensing developed to detect irreversible reactions and self-healing functionalities designed to repair damage occurred within the cell, Europe can develop cells with much higher quality, better reliability and longer cycle life. This call is building on the long-term research roadmap of BATTERY 2030+. The proposal should also cover the contribution and collaboration to the BATTERY 2030+ large scale initiative.

Project results are expected to contribute to all of the following expected outcomes:

- Increased quality, reliability and life (QRL) of the battery system by integrating both sensing and self-healing functionalities at the battery cell level.
- Disruptive battery cell and battery management system technologies, to support a competitive and sustainable battery manufacturing industry in Europe.

The target of this call is to embed sensors and self-healing functionalities into single battery cell, with sensors being capable to detect defective operation and trigger self-repairing functionalities via the Battery Management System (BMS).

Proposal should aim at a combined approach with the development of sensors capable of continuous, long term operation within the cell and on the development of self-healing functionalities which can be triggered by external stimulus. Sensors and self-healing functionalities need to be adapted to detection of the critical degradation processes during cell electrochemical or chemical ageing. Different battery chemistries can be addressed with a focus on most critical degradation processes.

Proof of concept of coupling sensors and self-healing agents via BMS should be demonstrated. Clear benefit of embedding smart functionalities into battery cells should be demonstrated and approach needs to be adaptable to battery cells mass production processes and not hinder subsequent recycling process. Estimation of QRL over the life span should be assessed and the competitive advantage over alternative approaches like replacement or recycling or second-use should be demonstrated.

Building upon the BATTERY 2030+ roadmap, this call topic addresses the need to develop new sensors and self-healing functionalities which can give the batteries of the future increased life-time, efficient re-use and better commercial success. The benefit of these innovation on the global battery safety should be demonstrated. The proposal should also cover the contribution and collaboration to the BATTERY 2030+ large scale initiative.

This topic implements the co-programmed European Partnership on 'Towards a competitive European industrial battery value chain for stationary applications and e-mobility'.

This Destination covers thematic areas which are cross-cutting by nature and can provide key solutions for climate, energy and mobility applications. In line with the scope of cluster 5 such areas are batteries, hydrogen, communities and cities, early-stage breakthrough technologies as well as citizen engagement. Although these areas are very distinct in terms of challenges, stakeholder communities and expected impacts, they have their cross-cutting nature as a unifying feature and are therefore grouped together under this Destination.

This Destination contributes to the following Strategic Plan's Key Strategic Orientations (KSO):

- C: Making Europe the first digitally enabled circular, climate-neutral and sustainable economy through the transformation of its mobility, energy, construction and production systems;
- A: Promoting an open strategic autonomy[['Open strategic autonomy' refers to the term 'strategic autonomy while preserving an open economy', as reflected in the conclusions of the European Council 1 - 2 October 2020.]] by leading the development of key digital, enabling and emerging technologies, sectors

and value chains to accelerate and steer the digital and green transitions through human-centred technologies and innovations;

- D: Creating a more resilient, inclusive and democratic European society, prepared and responsive to threats and disasters, addressing inequalities and providing high-quality health care, and empowering all citizens to act in the green and digital transitions.

It covers the following impact areas:

- Industrial leadership in key and emerging technologies that work for people
- Affordable and clean energy
- Smart and sustainable transport

The expected impact, in line with the Strategic Plan, is to contribute to the "Clean and sustainable transition of the energy and transport sectors towards climate neutrality facilitated by innovative cross-cutting solutions".

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d2-01-06;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspectionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageSearchTablePageState>

2. /HORIZON EUROPE/ Interface and electron monitoring for the engineering of new and emerging battery technologies, deadline: 06. September 2022 17:00 Brussels time

State-of-the-art in experimental and computational techniques for characterisation of battery materials and interfaces are targeting the scale of the atoms and ions. There is still a lack of understanding hampering the engineering of new and emerging battery technologies, due to the complexity of interface formation and evolution as a function of time, temperature, battery cycling conditions and chemical composition of the electrolytes consisting of different salts, additives and liquid solvents and/or solid components. Going into more depth, at process level, the time and the length scale of the electron transfer reactions remain almost completely underexplored.

Pushing the frontiers of present in situ analytical techniques is a must to more efficiently pursue research on sustainable materials and to develop greener Li-ion as well as future battery chemistries.

Improvements in analytical techniques that would allow to follow the movement of interfacial reactions at the molecular scale all the way to the role of electrons at the nanoscale and sub-nanoscale, at relevant timescales and on relevant systems and interfaces, will have great impact beyond the sole battery field and would benefit to the electrochemistry field as a whole, including electrocatalysis and others. It will contribute to open up a new era for the study of transport at interfaces, which remains one of the greatest challenges of research for any electrochemist. For researchers exploring new storage concepts and engineering new interfaces, it will also provide insight into how to control the movement and redox processes of atoms. It can lead to an increased control of the electronic wiring of electrodes and a deeper understanding of the redistribution of electronic charge during redox processes.

Project results are expected to contribute to all of the following expected outcomes:

- New methods for studying electrode/electrolyte interfaces for liquid-based electrolytes and batteries and for studying solid-state and buried interfaces.
- Models for explaining the degradation of battery interfaces.
- Deeper understanding of the formation and evolution of battery interfaces, leading to new insights on how to increase the lifetime and safety of new and emerging battery technologies, and therefore contributing to the long-term competitiveness of the European battery industry.

This topic should support the development of novel experimental and computational techniques targeting the time and length scales of interface reactions in a battery cell including electron and ion localisation, mobility and transfer reactions.

This targets the development of novel analytical techniques, supported by modelling and simulation, able to follow interface, electron and ion dynamics in battery materials and battery cells, and carefully selecting controlled model systems to implement those novel techniques.

Examples of experimental tools include operando Transmission Electron Microscope (TEM), Electron Paramagnetic Resonance (EPR), operando ambient pressure photoelectron spectroscopy techniques, operando X-ray scattering techniques, NMR, soft X-ray spectroscopy with RIXS, neutron spectroscopy, ultra-fast spectroscopic methods as well as Free Electron Laser (FEL) facilities. Other synchrotron and neutron scattering and ion-beam techniques leading to development of new understanding of interfaces can also to be suggested and implemented. The goal is to give advice and new insights on how to increase the life time and safety of new emerging technologies.

Building upon the BATTERY 2030+: this call topic addresses the need of increasing the fundamental understanding of processes in batteries at a level that will accelerate the development of more stable chemistries adapted for their specific purpose. The proposal should also cover the contribution and collaboration to the BATTERY 2030+ large scale initiative.

This topic implements the co-programmed European Partnership on 'Towards a competitive European industrial battery value chain for stationary applications and e-mobility'.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d2-01-02;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=e=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspectionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageSearchTablePageState>

3. /HORIZON EUROPE/ Sustainable processing and refining of battery grade graphite, deadline: 06. September 2022 17:00 Brussels time

For graphite, both natural and synthetic graphite production for the EV market take place almost exclusively in China. Although there is some existing mining of Natural graphite in Europe, scaling these sources for the active anode material needs within Europe will be very challenging as (i) extensive graphite exploration and mining would be needed, and (ii) almost all of the refining capacity is based in China. The main challenges in refining are low yield in the spheronisation and the use of large amounts of hydrofluoric acid in the refining step.

For synthetic graphite, by-products of oil distillation are used as the starting point, followed by calcining, milling, shaping and graphitisation. This process produces high quality anode graphite (enabling long lifetimes and fast charging) but is energy intensive and causes environmental emissions (CO₂, PAH). Opportunities to overcome all these problems exist already in Europe but need further development and investment to reach the required scale.

Project results are expected to contribute to all of the following expected outcomes on either natural or synthetic graphite production respectively:

- Decreased dependency of Europe on imported battery grade graphite and decreased risk in European Battery supply chains.
- Graphite (both natural and synthetic) competitively produced and refined in Europe in a sustainable and socially acceptable way improving the competitiveness of European batteries.
- Graphite leveraging the potential for fast charging of batteries, one of the key factors for the user acceptance of electric vehicles.
- Reduced carbon and environmental emissions from the anode material supply chain.
- Projects should contribute to European Raw Materials Alliance objectives.

The Synthetic graphite projects are expected to focus additionally on:

- System prototype demonstration of battery grade anode graphite material with high energy density, long lifetime and quality enabling fast charging, produced with increased yield and lower environmental

footprint.

- As a longer-term option, biocarbon alternatives to petroleum coke are expected to be developed to ensure long term sustainable supply.

The Natural graphite projects are expected to focus additionally on:

- Advanced refining of Natural graphite to improve the yield of battery grade products and lower the environmental footprint.

- Enabling European graphite production - with vertical integration into the European battery production. Resource efficient sustainable production of both synthetic and natural graphite emphasising reduction of energy consumption, CO₂ emissions, chemical use and the optimisation of recovery yield and raw material consumption. Enhance versatility regarding products and usable primary/secondary raw materials.

- Development of solutions for combined use of natural and synthetic graphite.

- For natural graphite: improving purification, milling, shaping and coating technologies that improve the performance characteristics of natural graphite.

- Improving the yield of spheronised products from natural graphite concentrate.

- Development of a non-HF purification technology to produce battery-grade anode material from spheronised natural graphite.

- Developing improved coating technologies for natural graphite that will increase the performance characteristics of natural compared to synthetic.

- For synthetic graphite: Improving graphitisation, calcining, milling, shaping and coating that improve the performance characteristics of synthetic graphite.

- The use of other available European carbon options like biobased anode carbon and by-products from anode material production as raw materials for synthetic graphite are expected to be developed.

- Development of new processes for synthetic graphite production from natural gas pyrolysis.

- Reduction of process discharge and emissions in synthetic graphite production.

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Further Information:

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4. /HORIZON EUROPE/ Next generation technologies for High-performance and safe-by-design battery systems for transport and mobile applications, deadline: 06. September 2022 17:00 Brussels time

Project results are expected to contribute to all of the following expected outcomes:

- Next-generation battery system technologies for electrification of a broad range of transport and mobile applications (including road, waterborne, airborne, and rail transport, as well as non-road mobile machinery).

- Demonstrating increased performances (energy density, power density, lifetime) and safety of battery systems, to improve the competitiveness of the European battery industry in the transport market.

- Novel design and process to reduce manufacturing, refurbishment, dismantling and recycling costs of battery systems.

Batteries are key for a climate neutral transport sector, which represents around 25% of the total CO₂ emissions in the EU. The electrification of transport and mobile applications require high-performance and safe battery systems. In particular, fire is a critical safety risk for several transport modes.

Projects are expected to develop innovative battery systems technologies that will benefit several transport and mobile applications, by significantly improving performances and safety, as well as environmental sustainability and cost.

In order to leverage the full potential of the research ongoing in Europe at the battery material and cell levels, projects should consider the adaptation of battery system design to novel cell chemistries that will reach the market in the short-to-medium term (e.g., advanced lithium-ion or solid-state cells). Enhancing the cell-on-system volume ratio and/or weight ratio will increase the energy density and/or power density at the battery system level. More generally, projects should consider new technologies (battery system materials, mechanical design, electrical architectures, thermal management strategies, etc.) for enhancing performances and safety (for example, novel lightweight materials with optimum thermal characteristics to decrease battery module and pack weight and simultaneously enhancing safety; new dielectric cooling liquids with enhanced fire-retardant properties; etc.).

Manufacturability and recyclability should be explicitly addressed, in order to reduce the manufacturing, refurbishment, dismantling and recycling costs as well as the carbon footprint of the new battery systems. Furthermore, the projects are expected to develop and assess methodologies to ensure the safety throughout the full battery lifetime.

The projects should focus on the battery system level, i.e., on the integration of battery cells into a battery system (e.g., a battery pack), considering mechanical, electrical and thermal aspects.

The integration of battery systems into larger systems of application (e.g., into vehicles) is out of scope for this topic, but obviously projects are expected to provide for requirements of the chosen use cases.

Project outcomes should be applicable to one or several use cases among the main transport or mobiles applications (such as road, waterborne, airborne and rail transport, as well as non-road mobile machinery and industrial applications), with the aim to maximise the impact on the European industry and on CO₂ emission reduction. Projects may consider the key performance indicators proposed by Batteries Europe or by the dedicated Partnerships, reflected in the Partnership Strategic Research Agenda (SRA), to guide the technology developments on the application segments and use cases that will be selected. Some of the project results can also be relevant for stationary energy storage applications.

This topic implements the co-programmed European Partnership on 'Towards a competitive European industrial battery value chain for stationary applications and e-mobility'.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d2-01-05;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=e=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspectionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>

5. /HORIZON EUROPE/ Physics and data-based battery management for optimised battery utilisation, deadline: 06. September 2022 17:00 Brussels time

Project results are expected to contribute to all of the following expected outcomes:

- New physics and data-based approaches for battery management, with the potential to enhance performances, lifetime, reliability and safety of battery systems for transport and stationary applications.
- New physics and data-based approaches for battery management facilitating predictive maintenance, and/or knowledge-driven end-of-life management of battery systems, and/or the development of more accurate degradation models.

Battery management plays an essential role by ensuring an efficient and safe battery operation. However, current battery management systems (BMS) typically rely on semi-empirical battery models (such as equivalent-circuit models) and on a limited amount of measured data. Consequently, there is currently a lack of knowledge about the overall state of the battery in operation, resulting in suboptimal utilisation.

Projects are expected to substantially advance the state of the art in the field of battery management, by developing innovative physics and data-based approaches, both at the software and hardware levels to ensure an optimised and safe utilisation of the battery system during all modes of operation. Projects should pave the way towards next-generation BMS, which will leverage on an increased computational capability enabling the execution of advanced software, and on the ability to acquire, communicate and analyse large amount of data. Those next-generation BMS will lead to significantly enhanced performances, lifetime, reliability and safety of the battery system, by a dynamic update of battery usage limitations and the possibility to widen the battery operating range in a controlled manner. Moreover, they will provide open access to an increased amount of FAIR data (which can possibly be processed offline), enabling the development of effective degradation models (thus reducing the investments costs of storage systems by mean of improved sizing during the design phase), and facilitating predictive maintenance and end-of-life management.

Projects are expected to develop technologies at both the software and hardware levels, with a validation through a lab-scale prototype at TRL 4. Several of the following items should be addressed: the development and implementation of physics-based battery models (e.g., ageing phenomena models); adaptable battery models (e.g., based on operation data); sensor-based solutions at the battery system level (e.g., with respect to sensor integration, communication with the battery management, data fusion, data analysis); advanced state estimators (e.g., state of health, state of function, state of energy, state of power, state of safety); methods for the prognosis of remaining useful lifetime and ageing; methods for the early detection or prediction of failures; solutions for the management of special situations (e.g., unbalanced or dysfunctional cells). Project results should be applicable to a broad range of transport or stationary applications.

The selected projects are invited to participate to BRIDGE activities when considered relevant.

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Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d2-01-09;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=e=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspectionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageSearchTablePageState>

6. /HORIZON EUROPE/ Logistics networks integration and harmonisation through operational connectivity to optimise freight flows and drive logistics to climate neutrality, deadline: 06. September 2022 17:00 Brussels time

Project results are expected to contribute to all of the following expected outcomes:

- Freight transport and logistics companies, including small and medium-sized enterprises, evolve to operate seamlessly engaging with nodes, partners and customers in an effective way, thus achieving a better utilisation of the assets and other resources in the freight transport and logistics chain within Europe.
- Energy and emissions reduction potentials higher than 20%, based on the operative gains without needing to renew the assets, are demonstrated by the shared logistics networks (collaborative logistics). Integration and harmonisation of closed independent logistics networks and of clusters of networks (e.g. from different logistics service providers or different cargo owners) providing open and shared services to manufacturers and retailers focussing on intra-European flows, would enable to optimise freight flows at system level, thus overcoming operational inefficiencies (e.g. peak overloads, partially loaded or empty transportation, sub-optimal transit routing, waiting times, higher overall costs, inefficient asset utilisation, increased emissions) and driving climate neutrality in logistics.

Projects will have to advance the adoption of technological solutions and organisational and behavioural models in use cases and applications under the leadership of logistics operators taking into account stakeholders' preferences.

In pilot actions, two or more logistics providers or shippers' logistics networks should develop and demonstrate a systemic framework for connecting effectively their independent logistics networks (at least partially) pooling the demand of various cargo owners and develop a system of logistics networks in which assets and services, including synchro-modal services, are shared and flows are managed in a consolidated way demonstrating potential benefits. Proposals should address all the following points and subpoints:

- Develop and demonstrate a robust and transparent collaborative framework with guiding principles to ensure operational connectivity of logistics networks (e.g. services, shared resources and assets, information and financial flows, etc.) under the lead of logistics providers and addressing governance and potential anti-competition law issues. Current independent closed networks gradually are expected to become connected networks with shared and open capabilities, including intermodal transport solutions in specific demonstrators.
 - Through the pilot cases and demonstrators:
 - Identify and demonstrate potential gains of these logistics networks / systems of logistics networks compared to independent logistics networks in terms of emissions and energy consumption reduction and potential business models for uptake beyond the project duration.
 - Identify main barriers and opportunities to achieve a system of logistics networks, propose solutions and pilot them to deliver guidelines for expansion and implementation.
 - Address governance aspects (e.g. how to organise and expand the logistic network with other logistics networks willing to join or how to legally engage with users of these shared logistics networks services and capabilities) and propose actions to accelerate organic and jointly acceptable growth of these logistics networks.
 - Identify innovative business models addressing also revenue sharing.
 - Identify and assess existing regulation (e.g. anti-competition) preventing or the need for new regulation to enable this shared and holistic approach, by building on the results and outcomes of previous and ongoing projects and activities. Develop guidelines to address specific concerns and propose specific recommendations that should be considered.
 - Identify and assess the main drivers and barriers towards horizontal collaboration in terms of organisational cultures and frameworks of the logistics service providers and the transport operators. Propose solutions to overcome the barriers and recommendations on how to create the best conditions (success factors) to boost new logistics collaborations, maintain them and reap their benefits. Social innovation is recommended when the solution is at the socio-technical interface and requires social change, new social practices, social ownership or market uptake.
- This Destination includes activities addressing safe and smart mobility services for passengers and goods. Europe needs to manage the transformation of supply-based transport into safe, resilient and sustainable transport and demand-driven, smart mobility services for passengers and goods. Suitable research and innovation will enable significant safety, environmental, economic and social benefits by reducing accidents caused by human error, decreasing traffic congestion, reducing energy consumption and emissions of vehicles, increasing efficiency and productivity of freight transport operations. To succeed in this transformation, Europe's ageing (and not always sustainable) transport infrastructure needs to be prepared for enabling cleaner and smarter operations.
- Europe needs also to maintain a high-level of transport safety for its citizens. Resilience should be built in the transport systems to prevent, mitigate and recover from disruptions. Research and innovation will underpin the three safety pillars: technologies, regulations and human factors.
- Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d6-02-01;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>

7. /HORIZON EUROPE/ Urban logistics and planning: anticipating urban freight generation and demand including digitalisation of urban freight, deadline: 06. September 2022 17:00 Brussels time

Project results are expected to contribute to all of the following outcomes:

- Take up and upscaling of innovative, best practice and replicable data driven logistics solutions and planning in the living labs involved in the proposals, while facilitating the common lesson drawing and learning at European level, in order to contribute to the priorities of the European Green Deal, which stresses that "transport should become drastically less polluting, especially in cities. This action supports city sustainability targets such as climate neutrality, road safety, improved air quality, reduced congestion and better use of public space.
- Optimal mix distribution of land uses both in city centres and peripheries looking at the preferred rationales for achieving the best combination of residential, commercial, leisure and industrial space to reach the most sustainable mobility patterns according to the available and future transport supply and demand.
- Improved local authority capacity in the managing and collection of data, estimation and measurements of the impacts achieved by new measures and if a regulation is needed to ensure this happening.
- Valorisation of data and information gathered from urban freight to better understand the impact of long-haul deliveries and e-commerce on the city as "just in time" deliveries are producing longer and more trips with more and emptier vehicles, leading to more congestion, air and noise pollution, Greenhouse gas (GHG) emissions and road risk in urban areas.
- Optimise the potential mix of strategically positioned land, owned by public authorities (unused railway tracks and marshalling yards, real estate, parking) or by logistics service providers in urban areas, for developing a comprehensive policy strategy integrating transport, logistics and land use. The scope of this exercise includes the roll-out of new modes and increasing use of sustainable modes (waterways and rail). Better understand the impact of increasing transport and logistics patterns on the climate and environment, resilience and robustness of the transport network and the urban infrastructure. This exercise addresses as well the increasing impact of new modes, (electric assisted) cargo bicycles, light electric freight vehicles (LEFV) and vehicles on alternative fuels.
- Optimize shared transport facilities for goods through smart solutions.
- Improved space management and urban planning focusing on the "new normal" after the Covid-19 pandemic considering how cities are optimising their planning and allocation of space.
- Demonstrate and deploy economically viable and sustainable solutions driven by relevant technologies (e.g. real-time traffic information, space management, floating car data) and demonstrate the convenience of consolidation, consistent with the full planning of loading and unloading spaces, to deliver the services and the goods.
- New or upgraded sustainable urban logistics plan that includes the main stakeholders (cities, logistics operators, couriers, postal services, real estate and/or retail industries) and addresses to a minimum: development of safe and sustainable logistics and delivery models in cities, low emission zones, data collection and usage, consolidation and space management, clean and alternative vehicles, stakeholders dialogue, e-commerce.

How urban space is being used and allocated can influence congestion, noise, road risk, air quality, GHG emissions as well as liveability. At the same time there is a gap for purpose-oriented freight data collection

in cities to support their decision making towards sustainability targets such as climate neutrality, air quality, road safety reducing congestion and better use of public space.

Proposals should consider dynamic space re-allocation for the integration of urban freight at local level and the impacts of how urban space is being used as well as the optimal mix of space distribution and of land uses. Proposals should analyse the potential of strategically positioned urban (or peri-urban) spaces to develop and implement a pilot demonstration, (but without interfering with parks, trees or other recreational green areas). The aim is to reduce the impact of freight transport and logistics on the urban fabric.

Projects could consider involving real estate companies, logistics service providers, together with cities, to develop sustainable business models for open and clean hubs/consolidation spaces in cities (for example using/sharing existing private locations such as underground private parking, office buildings and other potential available spaces in cities - while respecting security constraints).

A more efficient policymaking on urban freight logistics requires cities to enhance their data collection capabilities, while private logistics or e-commerce (like food delivery) companies and services should be encouraged to share data. Potential applications are Urban Vehicle Access Regulations (UVARs), including Low Emission Zones (LEZ), smart parking and dynamic space management and better traffic planning. A vast amount of transport data from different parts of the transport system currently remains unexploited. Understanding barriers and opportunities as well as developing local capacity related to data collection within the urban and peri-urban transport system is a first step to encourage private and public organisations to share transport data. Potential benefits of the data applications need to be checked on how they could support the optimization of sustainable mobility plans (SUMPs) and sustainable logistics plans (SULPs).

A thorough evaluation should provide qualitative and quantitative information on the results of the local solutions implemented. The effectiveness of the proposed measures in achieving local policy objectives should be evaluated and the possible barriers to their broad take up and deployment identified, together with recommendations on how to overcome them. This should be accompanied by mechanisms for common lesson drawing and learning, within the project, between the projects funded under this topic and through the CIVITAS Initiative.

Proposals may include preparatory, take up and replication actions, research activities, as well as tools to support local planning and policy making. A demonstrated contribution to the implementation of the cities' Sustainable Urban Mobility Plans is expected. If not already in place, the city can develop a Sustainable Urban Logistics Plan or other appropriate planning instrument to manage urban freight and logistics. Funding for major infrastructure works is not eligible. Proposals should plan for an active collaboration within the CIVITAS initiative.

This topic requires the effective contribution of SSH disciplines and the involvement of SSH experts, institutions as well as the inclusion of relevant SSH expertise, in order to produce meaningful and significant effects enhancing the societal impact of the related research activities.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d6-02-02;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspectionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageSearchTablePageState>

8. /HORIZON EUROPE/ Advanced multimodal network and traffic management for seamless door-to-door mobility of passengers and freight transport, deadline: 06. September 2022 17:00 Brussels time

Project results are expected to contribute to at least four of the following expected outcomes:

- Improved multimodal transport network and traffic management capabilities, facilitating seamless door-to-door mobility for passengers and freight.
- Effective and resilient network-wide data exchange and new integrated data management systems for dynamic and responsive multimodal network and traffic management.
- Tested and validated systems for enhanced prediction and resolution of network bottlenecks, substantially increasing safety, security, resilience and overall performance of the entire transport network.
- Innovative tools and services for optimising mobility flows of passengers and freight in cities and other operating environments, cutting congestion, journey times and traffic jams across transport modes, and thereby significantly reducing emissions (CO₂, SO_x, NO_x, particles, noise).
- New governance arrangements for multimodal transport network and traffic management, in view of further regulatory and policy actions.
- High market adoption and transferability of innovations to different ecosystems.

Advanced multimodal network and traffic management capabilities are essential for the efficient operation of the entire transport network and for seamless door-to-door mobility of both passengers and freight. This is even more pertinent in view of new mobility trends and technologies, connected and automated vehicles, new physical and digital infrastructures and innovative services. At the same time however, a number of challenges remain to develop validated concepts and leverage multi-actor data exchange, ensure interoperability of new technologies and develop interfaces across transport modes, as well as to design appropriate governance arrangements for relevant public and private stakeholders.

In this context, building on best practices (technological, non-technological and socio-economic), ongoing projects on multimodal network and traffic management, as well as other initiatives (e.g. the Digital Transport and Logistics Forum), actions should address at least six of the following aspects:

- Developing and carrying out validation for multimodal, dynamic, (cyber and physically) secure and resilient transport network and traffic management systems, leveraging state of the art technologies (e.g. artificial intelligence, high-performance computing, edge computing).
- Demonstrating effective collection, analysis and use of network-wide fixed and variable data (e.g. using ICT and EU satellite-based information from vehicles, physical infrastructures and users) and developing integrated data management and monitoring systems, for effective and intelligent multimodal network and traffic management.
- Developing new methods and tools for harmonised and comparable international monitoring of mobility demand, for passenger mobility and freight transport, including through survey data collection and big data processing, leveraging the opening of service providers' databases to research and public authorities.
- Conducting simulations for system-wide optimisation of demand/capacity balancing for multimodal passenger and freight flows, against foreseen (e.g. traffic disruption due to an important city-wide event) and unforeseen scenarios (e.g. major network/traffic disruption as a result of a hazard manifestation or compromise in transport safety due to a health emergency), to enable real-time prediction and balancing of mobility behaviour, as well as early problem detection and resolution.
- Developing and testing network and traffic management visualisation and decision-making tools (e.g. using big data, artificial intelligence, machine learning), while taking into account regular mobility patterns (including soft modes) and user needs of citizens (including vulnerable road users and different gender groups) and businesses, as well as ad-hoc and flexible mobility-on-demand services, in the context of mobility/logistics as a service.
- Demonstrating interoperability and enhanced interfaces of network and traffic management systems across stakeholders, transport modes and country borders.
- Performing early pilot activities on multimodal network/traffic management, of limited scale and in defined environments, such as in the context of urban mobility of passengers and freight.
- Conceiving, developing and preparing the introduction of next-generation multimodal network and traffic management services, provided by public and/or private stakeholders and operationalised at a centralised and/or decentralised level.
- Develop and test implementable multi-level governance models, with roles and responsibilities for public and private stakeholders to share data and engage in transport network and traffic management

functions, providing recommendations for further regulatory and policy actions.

In line with the Union's strategy for international cooperation in research and innovation, international cooperation is encouraged.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d6-02-05;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>

9. /HORIZON EUROPE/ Coordination of large-scale initiative on future battery technologies, deadline: 06. September 2022 17:00 Brussels time

Project results are expected to contribute to all of the following expected outcomes:

- Fostering the scientific, technological, economic and societal impact of the initiative and paving the way to industrial exploitation of future battery technologies in key energy and transport application domains.
- Well-coordinated European research initiative on future battery technologies gathering excellent scientists and innovators as well as involving other relevant stakeholders and linked with relevant international, national and regional programmes.
- Spreading of excellence in future battery technologies across Europe, increased awareness of European activities and availability of European curricula in the field.
- Increased synergies and collaboration between the relevant research and innovation stakeholders in Europe as well as with major initiatives that already exist or are under preparation.

This call topic aim to network and coordinate the BATTERY 2030+ large scale research initiative on Future Battery Technologies and its contribution to the broader efforts of the European research and innovation stakeholders in battery technologies foreseen at European level and in the Strategic Energy Technology (SET) Plan and to tackle long-term research challenges expected to result in 'game changing' impacts on future battery technologies paving the way for providing a technological competitive advantage to the European battery industry. Because of their ambition, their scale and their interdisciplinary nature, these challenges can only be realised through a long-term, coordinated and sustained effort at European level, by building on large scale research cooperation across academia and industry and with other research initiatives at regional, national and European level, and by mobilising Europe's best researchers around an ambitious long-term research agenda.

Proposals are expected to coordinate the research activities and the stakeholders participating in the initiative; to facilitate communication, dialogue and cooperation on crosscutting topics; to monitor the initiative's progress and maintain its roadmap; to provide support for its governance; to establish a robust and reliable knowledge base including key methodologies and established results; to promote and communicate the objectives of the initiative and its achievements, including by ensuring media presence and public visibility, by engaging with industry and society and by participating or organising outreach events; to identify training and education needs and promote European curricula in future battery technologies. In particular, proposals should identify and coordinate relevant efforts for modelling and data sharing, standardisation, intellectual property rights in cooperation with other relevant initiatives at European level. They should also help networking and collaboration with other relevant national and international activities in the field. They should cooperate with Batteries Europe, the ETIP on battery announced in the EU Strategic Action Plan on Batteries.

It is expected that such an activity is driven by representatives of the relevant actors of the field (e.g., from academia, RTOs and industry).

This topic implements the co-programmed European Partnership on 'Towards a competitive European industrial battery value chain for stationary applications and e-mobility'.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d2-01-08;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>

10. /HORIZON EUROPE/ Smart and efficient ways to construct, maintain and decommission with zero emissions from transport infrastructure, deadline: 06. September 2022 17:00 Brussels time

Project results are expected to contribute to the following expected outcomes:

- A holistic approach to lowering transport infrastructure environmental impact, which takes into account the whole life cycle of transport infrastructure; carbon-neutral construction, maintenance, operation and decommissioning of the infrastructure
- Implementation of circular economy principles (for example, by fostering new solutions and systems that are easy to maintain, repair, update, adapt and replace and by maximising the re-use/recycle of infrastructure components) to reduce emissions and the environmental impact; 100% reutilisation of construction materials within or across transport modes.
- Performance-based design models and manufacturing techniques (e.g. additive and subtractive manufacturing) with the objective to substantially reduce materials consumption in construction and maintenance activities.
- Enhanced modular construction, maintenance and decommissioning interventions able to reduce life cycle cost (LCC) by at least 30%.
- Optimisation of energy use and increased share of renewable energy for infrastructure management operations as a way leading to achieving energy neutrality
- Novel governance, public procurement and data utilization models to decrease the emissions and carbon footprint of the whole life cycle of transport infrastructure by 20%

The overall objective of the topic is to support the development of sustainable transport infrastructure, addressing its environmental and economic efficiency dimensions.

Research should provide knowledge and technical solutions to limit transport emissions, both caused by transport infrastructure and to which transport infrastructure contributes, as the infrastructure related emissions are often unaccounted for. This is due to the long time between construction and decommissioning. Projects should cover the whole life cycle of transport infrastructure to which extent transport infrastructure design can influence and limit the overall emissions from construction, maintenance, operation and decommissioning of the infrastructure.

Proposals should address all of the following aspects:

- Development of new methods and technologies to construct, manage and maintain transport infrastructure in order to further contribute to lowering emissions while allowing for cost saving.
- Fostering of green, sustainable and innovative public procurement (particularly focused on the reduction of emissions, recycling and climate adaptation and mitigation).
- Development of smart techniques for effective construction, maintenance and decommissioning tasks leading to zero emissions from transport infrastructure. Modular, standard and prefabricated solutions need to be considered. Additive manufacturing techniques (e.g. 3D-printing) can be also taken into account. Recycling and reuse of materials should be also incorporated into the automated processes.
- Design and development of solutions for reduction of emissions through more efficient energy management on transport infrastructure operations by, for example energy harvesting on infrastructure and its verges, adaptive lighting systems, self-powered signalling systems and innovative tunnel ventilation. The proposed solutions should take into consideration existing regulations.

- Validation of all the proposed solutions in at least three demonstration pilots at minimum TRL7, considering different environments and phases of the infrastructure life cycle, namely design, construction, maintenance and decommissioning.

Proposals should build on previous results from projects on sensoring, digitalisation, asset management, decision support and automation in the construction and maintenance of infrastructures.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d6-02-06;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspectionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>

11. /HORIZON EUROPE/ CIVITAS 2030 - Coordination and support for EU funded urban mobility innovation, deadline: 06. September 2022 17:00 Brussels time

Projects are expected to contribute to all of the following outcomes:

- Increasing the extent and speed of the take up of innovative, replicable urban mobility solutions in Europe, targeting responsible authorities and other stakeholders, in order to contribute to the priorities of the European Green Deal, which stresses that "transport should become drastically less polluting, especially in cities. A combination of measures should address emissions, urban congestion, and improved public transport":
 - Develop, and put in place a communication, dissemination and promotion strategy that will clearly distinguish the identity of the CIVITAS initiative amongst other European city initiatives.
 - Provide a common communication and dissemination framework for CIVITAS urban mobility projects and their living labs, but also other projects that express interest in receiving CIVITAS support (referred to from now on as 'the projects'), including providing a common corporate identity and producing a monthly newsletter that includes project results as well as wider developments in the field of sustainable urban mobility.
 - Provide a common realistic and user-friendly evaluation framework with dedicated support for its implementation.
 - Reach out to national transport press correspondents and relevant European media, the Horizon project community and a wider European and international audience of cities and professionals with the aim of increasing the visibility of the network and urban mobility projects.
 - Monitor results and implementation activities in the projects and provide the European Commission with a bi-annual report.
 - Facilitating exchanges among the projects and the European Commission with the aim of disseminating project key milestones and results.
 - Organising capacity building, replication and twinning sessions and three site visits per year, based on latest results and best practices from the projects, to support the take up of innovative urban mobility solutions.
 - Organise a CIVITAS Forum once per year to share results and best practice from the projects.
 - Collaborate on the organisation of the Urban Mobility Days (flagship conference on innovative, clean and integrated urban mobility
 - Collaborate on the organisation of the Urban Mobility Days (flagship conference on innovative, clean and integrated urban mobility and transport).
 - Disseminate project results as well as wider developments in the field of sustainable urban mobility, European media outlets, of cities and professionals.
 - Assess the CIVITAS newsletter database and increase it by 20% every year.
 - Offer the projects' liaison activities, collaboration and synergy building with the different urban mobility communities and initiatives at European level, such as the ELTIS, EIP SCC, Driving Urban Transitions

Partnership, EIT Urban Mobility and the Climate Neutral and Smart Cities Mission.

- Maintaining, optimising and promoting the CIVITAS website through usability tests, and improving its functionality, to ensure that it remains the main platform for the dissemination of relevant European urban mobility innovation results increasing the minimum of unique visitors with 20% every year.
- Increase the CIVITAS twitter followers by 20% every year. Provide a strategy for social media engagement.
- In collaboration with European Commission services, prepare two policy papers per year on innovative solutions, good practices, and their replication, putting in place three ad-hoc Thematic Groups (based on the thematic areas of CIVITAS) to analyse developments and prepare recommendations.
- Organise minimum two meetings per year of the CIVITAS Policy Advisory Committee, with one policy paper issued per year, to facilitate a continued dialogue between mayors, businesses and civil society.
- Prepare policy recommendations and key learnings addressed to cities, Member States/Associated Countries and the European Commission based on latest technological and planning trends, research and innovation as well as results from ongoing projects.
- Updating, promoting and enlarging the CIVITAS cities network, with at least 20 new European cities added per year.
- Providing support and funding to existing CIVINETs, maintaining the secretariat for the CIVITAS initiative, and actively engaging with local, regional or national stakeholders, aiming to overcome language and other barriers.

Together with initiatives of ELTIS and the European Mobility Week, CIVITAS is part of the EU policy on urban mobility as a key flagship encouraging innovation at local level. Since 2002 it acts as an open platform that facilitates research, the uptake of innovative solutions, the validation of research results, the exchange of knowledge and best practices, and common learning in the area of urban mobility and transport. The project selected under this topic will help to ensure the long-term support for the CIVITAS projects offering governance, and an organisational and logistical framework that guarantees the wide dissemination and take up of urban mobility project results.

Proposals should aim at focusing activities on communication and event organisation and coordination of living lab activities continuing and enhancing the operation of the platform, to facilitate the continued coordination and knowledge exchange between the urban mobility projects that have been, or that will be funded under the CIVITAS initiative (not exclusive). These projects will deliver solutions that help achieve climate neutrality in cities, covering both personal mobility and goods/urban logistics using all transport modes.

Proposals should aim at putting in place a common communication and dissemination strategy to maximise the impact of the CIVITAS initiative. Proposals should ensure the monitoring of activities, events and results of the urban mobility projects and communicate about their progress and achievements. Applicants should also review the common 'CIVITAS Process and Impact Evaluation Framework' and ensure the continuity of the CIVINETs. They should ensure continuity and provide a smooth transition from the previous Coordination and Support Action, CIVITAS ELEVATE.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d2-01-11;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspectionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageSearchTablePageState>

12. /HORIZON EUROPE/ Towards creating an integrated manufacturing value chain in Europe: from machinery development to plant and site integrated design, deadline: 06. September 2022 17:00 Brussels time

Project results are expected to contribute to all of the following expected outcomes:

- Strengthening Europe's battery cell industrial manufacturing value chain by building-up its Giga scale manufacturing capabilities distributed in the member states territories.
- Development of new battery cell manufacturing machinery, with priority on minimising energy needed for cells production, enhancement of plant efficiency rates and integration of intelligent control processes to minimise scrap.
- Enabling deeper collaboration between (i) battery process equipment companies (ii) industrial-scale cell manufacturing, (iii) material, energy and other supply chain sectors benefitting from sector coupling.
- To stimulate and intensify the collaboration between pilot line operators, industrial-scale academia, cell manufacturing companies and European equipment companies to push innovations with regard to an economically and ecologically sustainable cell production in Europe.

In order to build globally competitive Li ion battery (LIB) cell production plants in Europe, all the production value chain from machinery to plant and site development and optimisation is expected to be considered holistically, from machinery development to plant and site integration and optimisation. This topic intends to cover both areas.

In recent years Europe has developed strong competences in Li ion battery technology with regard to academic research, material development and Battery system design. However, there is still a lack of knowledge and competence regarding the economically and ecologically production of LIB cells in both high volumes in Giga-factories or in much smaller batches for specialised applications as developed in Mega-factories. From this perspective, the scope of this topic is two-fold:

- From one side, to be able to supply machinery which is developed and built locally, Europe has to develop a leading position in the production of resource efficient, intelligent electrode and cell manufacturing machinery.

In the development of such battery manufacturing machinery, important aspects for success include: minimising energy consumption, eliminating air and water pollution and integration of intelligent control processes to minimise scrap thus reducing costs and environmental impact of the production process. In addition, such machinery is expected to operate at very high productivity levels with incorporate intelligent quality control systems. Moreover, strategies of industry 4.0 should be intensively integrated in new European cell production plants to yield economic success.

- From the other side, battery cell production as a whole is currently confronted with enormous cost pressure. One major factor in the cost structure of European Giga-scale battery cell production is related to highly energy consuming manufacturing processes. A significant reduction and/or utilisation of low-carbon and low-emission energies would not only bring economic benefits, but would also provide clear advantages in terms of the ecological footprint. For sustainable success, the horizontal integration of the European supply chain for battery process equipment into the growing production of giga-scale battery cells is a major challenge.

Hence, this topic aims at closing a gap and enabling deeper collaboration between industrial-scale cell manufacturing, battery process equipment companies, and material and other industrial sectors potentially benefitting from sector coupling with cell manufacturing (e.g. grid power or material suppliers). Therefore, existing cell production lines and their material and energy flow internally and externally interaction with other companies at the site should be investigated and evaluated. Based on this, the network should investigate the ecological impact of different machinery, production line configurations and factory designs to come to best practice proposals. Another challenge is to implement ecological standards along the production chain together with material suppliers and factory operators.

One additional target to achieve these goals is to stimulate and intensify the collaboration between pilot line operators (e.g. which should be organised within the LiPLANET network), industrial-scale academia, cell manufacturing companies and European equipment companies to push innovations with regard to an economically and ecologically sustainable cell production in Europe. This includes the support from running activities including for example IPCEI's on batteries.

This topic implements the co-programmed European Partnership on 'Towards a competitive European industrial battery value chain for stationary applications and e-mobility'.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d2-01-04;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>

13. /HORIZON EUROPE/ Digitalisation of battery testing, from cell to system level, including lifetime assessment, deadline: 06. September 2022 17:00 Brussels time

Project results are expected to contribute to all of the following expected outcomes:

- Competitiveness of the European battery industry across the value chain (from cell manufacturers to cell integrators);
- Shorter time-to-market;
- Reduced time and/or cost of battery development by at least 20% to 30%;
- Improved battery design, for longer lifetime, and better reliability and safety;
- Reduced investment and operational costs of battery systems.

The current way of developing batteries is mainly based on trial-and-error processes, which are time consuming, costly, and do not always lead to the best product design. It is particularly the case when it comes to testing batteries to assess their performance, lifetime, reliability and safety. Existing methods and tools lead to high costs, because of long test durations, and/or the high number of required test samples, and/or the use of costly test infrastructures. There is a significant room for improvement, by relying on digital methods and tools to minimise the use of standard trial-and-error processes.

Digitalisation of battery testing will lead to an acceleration of the battery development time, a higher quality of the battery assessment (better evaluation of battery performances, lifetime, reliability and safety), and an improvement of the battery design itself (by better adapting the design to the application requirements and production capabilities) and a better estimation lifetime (by better modelling of battery ageing). Improvement in battery testing will result in major cost savings, in particular in the development phase (test before invest).

Projects are expected to provide novel methods and tools to accelerate and improve the battery testing process. A multi-scale approach should be used, by covering the value chain from battery cells to battery systems (here, a battery system refers to an energy storage unit integrating battery cells, excluding power converters). Projects should propose and validate a new paradigm based on intelligent design of experiment (to avoid duplicated experiments, or experiments that give low-quality information), the smart combination of physical and virtual testing, hardware in the loop solutions, and the development and use of advanced models describing battery cells and systems (physics-based models, data-driven models, or hybrid models) and the relevant expected evolution in multiple different conditions of usage. In turn, this requires full documentation of new modules, models or tools developed from scratch or substantially improved. Particular attention should be paid to the assessment of battery lifetime, reliability and safety, including the development of innovative methods for testing of safety in transport and safety in usage, based on representativeness of the method for the various potential failures (failure initiation, propagation control, mitigation means, etc...). Projects should have an ambition for cross-sectorial applications, and should focus on battery chemistries currently on the market or that will reach the market in the short term (i.e., advanced lithium-ion chemistries), with the potential to quickly adapt to next-generation battery chemistries (i.e., solid-state lithium-based chemistries).

This topic implements the co-programmed European Partnership on 'Towards a competitive European industrial battery value chain for stationary applications and e-mobility'.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d2-01-07;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=1,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=;e=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=;ionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>

14. /HORIZON EUROPE/ Streamlined collection and reversed logistics, fully automated, safe and cost-efficient sorting, dismantling and second use before recycling, deadline: 06. September 2022 17:00 Brussels time

Project results are expected to contribute to all of the following expected outcomes:

- Achieving the objectives of the Circular Economy Action Plan by enabling second life of batteries and increasing rates for recycling and recovery, in line with upcoming regulatory requirements.
- Revolutionize and re-freshen recycling industry, by applying best-in-world innovations based on automatisisation, efficiency and sustainability.
- Create new circular business models, such as second life, to reduce the need for primary raw materials, and to maximize the use of battery cells reducing the cost per cycle.
- Develop a community for actors involved in the management of the recycling value chain for batteries (including second life) for sharing best practices (health and safety, transport, dismantling, refurbishing, recycling).
- Improve safety, through automatisisation and reducing accidents.

Today the amount of end-of-life (EoL) batteries from e-mobility and stationary applications is still limited. Moreover, EoL batteries are not standardised (form, chemical composition, etc.) and consequently, their management and recycling are mainly based on manual process. This increases risk of accidents as the integrity of the batteries / cells is no longer guaranteed.

Within next several years, the amount of EoL batteries will surge, transforming the recycling and battery value chain in general. It is important to develop efficient recycling chain and processes able to meet these upcoming amounts of diversified waste streams. A general approach to recycling should thus be reconsidered and new sustainable recycling chain for batteries should be established, in terms of introducing novel approaches to products, processes and keeping in mind their socio-economic viability and environmental impact.

It will require new upscaleable techniques and concepts for collection, logistics, and automatisisation in sorting, dismantling and second use before recycling.

Proposals are expected to cover all aspects below:

- Development of standardized common diagnostics protocols and cut-off criteria between product (2nd life application) and waste (recycling).
- Elaborate critical stage of diagnosis of batteries as a waste-prevention measure in order to define which batteries or components of batteries are still considered fit for a second life application.
- Automate the dismantling of E-mobility and stationary batteries, reducing costs by avoiding manual work and improving sorting of parts for their replacement or preparation for recycling allowing the selective extraction of materials including the cathode and anode materials which for certain Li-chemistries lead to a higher value creation for the downstream recyclers.
- Development of novel safe dismantling processes and safety procedures along all steps of EoL management chain with focus on battery burning process (thermal runaway), identification of Limiting Oxygen Index (LOI) and Lower Explosive Limits (LEL).
- Development of technologies preventing or reducing thermal runaway during transportation, storage and dismantling of batteries.
- Design and demonstration of standardized and cost-efficient storage and transportation containers with visual and thermal load monitoring systems and, if necessary, inert atmosphere or other measures

reducing risk of fire or thermal runaway.

- Development of technologies for fast and efficient discharge of used batteries, connected with energy recovery, possibly integrated with SoH diagnostic equipment, with flexible connectivity and adjustable to various kinds of batteries.

- Development of standardized battery labelling system enabling all interested parties to automatically obtain necessary data on each battery. Potential integration of labelling system with battery passport database project and with labelling systems from other regions of the world (e.g. China). Identification of necessary data that should be included into labelling and battery passport projects.

- Research on batteries sorting and dismantling technologies, particularly automated sorting including machine learning applicable to small and EV batteries.

- Identify all potential risks and develop safe processes and safety procedures to reduce accidents.

This topic implements the co-programmed European Partnership on 'Towards a competitive European industrial battery value chain for stationary applications and e-mobility'.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d2-01-10;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=e=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspectionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageSearchTablePageState>

15. /HORIZON EUROPE/ Smart enforcement for resilient, sustainable and more efficient transport operations, deadline: 06. September 2022 17:00 Brussels time

Projects are expected to contribute to the following outcomes:

- An innovative, efficient, consistent and resilient enforcement system thanks to the direct contactless access to real-time digitized information on vehicle, driver and cargo by competent authorities.

- A more competitive and fairer transport internal market thanks to the realisation of "compliance by design" and "compliance by default" principles.

- Optimisation of the use of human and economic resources and increased productivity for both, public control authorities and transport operators, due to reduced administrative burden and time, while achieving a very significant increased control efficiency and consistency.

- Improved transport workers social conditions and increased attractiveness of the sector, by reducing the pressure put on them as the main subjects responsible for law compliance.

- Accelerated deployment of e-government services by authorities and uptake of digital solutions by transport operators for information exchange.

- Decreased number of transport accidents, incidents and fatalities linked to the higher levels of compliance with road transport legislation.

- Accelerated deployment of innovative connected, cooperative and automated mobility (CCAM) technologies and systems for passengers and goods to increase safety and reduce environmental impacts.

The research and innovation activities should provide innovative solutions for allowing the authorities to access directly and in real time all relevant information required under the different pieces of legislation in "one click". In particular, that should include social rules (such as Regulation No 561/2006 on Driving times and resting periods, Regulation (EU) 165/2014 on the Tachograph and Directive 2006/22/EC as regards enforcement requirements for posting drivers in the road transport sector), market rules (such as Regulation 1071/2009 on access to the occupation of road transport operator, Regulations 1072/2009 and 1073/2009 on access to the market for freight and passenger road transport, Directive 96/53/EC on weights and dimensions of certain road vehicles, Directive (EU) 2016/797 on the interoperability of the rail system, Directive (EU) 2016/1629 on technical requirements for inland waterway vessels, and Directive 2005/44/EC on harmonised river information services (RIS) on inland waterways in the Community), as

well as safety legislation (such as Directive 2006/126/EC on driving licences, Directive 2003/59/EC on the certificate of professional competence of drivers, Directive 2007/59/EC on the certification of train drivers and Directive (EU) 2017/2397 on the recognition of professional qualifications in inland navigation). Research and innovation actions are expected to bring together stakeholders at various level, from supply chain (e.g. manufacturers, retailers, freight forwarders and logistics service providers), transport services (e.g. transport operators, enforcing authorities) and infrastructure networks (e.g. road / rail / inland waterways operators and transport node public authorities) to ensure a truly integrated approach. The technical solutions should take into account the work done in the Digital Transport and Logistics Forum and in its subgroup on electronic documents in particular, and build on the existing electronic databases and exchange of information platforms (RESPER, ERRU, TACHONET, RIS, IMI, eFTI, etc.), as well as privately developed tools already in place, allowing for their interconnection or integration in order to provide seamless access and exchange of information under the "only once principle". They should also develop existing and/or new concepts and systems to incorporate the areas that are not yet covered by such electronic databases and platforms. The aim is to achieve a comprehensive ecosystem for smart transport enforcement that is tested and proved to be viable, economically and technically, and allows for future integration with relevant information exchange systems in use or considered for deployment in all modes of transport, as part of a wider multimodal transport information exchange environment. The research should also provide assessment and recommendations on ensuring that there is a business case for the operators to make the information available electronically to the authorities, and for the authorities to accept it and implement the means to use this information in line with the "only once principle". Recommendations could eventually include the need for legislative measures to support the uptake of the digital and communication technologies for smart enforcement. Furthermore, the research should consider the business case and conditions for reusing administrative information, where relevant, for the purposes beyond proving legal compliance. This includes, for instance, for compiling statistics, informing research, assessing the use of infrastructure, optimising logistics operations and maximising utilisation of assets. Social innovation is recommended when the solution is at the socio-technical interface and requires social change, new social practices, social ownership or market uptake.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d6-02-03;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=;e=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspectionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageSearchTablePageState>

16. /HORIZON EUROPE/ New concepts and approaches for resilient and green freight transport and logistics networks against disruptive events, deadline: 06. September 2022 17:00 Brussels time

Projects are expected to contribute to the following outcomes:

- An adaptive multimodal European freight transport and logistics network, including its international connections, that reacts quickly and seamlessly upon disruptions (including pandemics), hence minimising the damage and shortening the recovery time while significantly reducing emissions.
- European freight transport and logistics networks which are resilient by design, thanks to better operational interconnectivity of the stakeholders, services provided based on real-time status information, pre-defined alternative routes and synchro-modal approaches, robust data management, secure and resilient digital logistic and network management tools.
- New cost-efficient business models and services towards resilient and zero-emission logistics are adopted by the sector in the short-medium term, also supported by appropriate regulatory frameworks

and participatory planning processes.

New production and distribution trends (e.g. globalisation, lean manufacturing, just-in-time inventory) as well as emerging digital technologies have introduced new kinds of challenges to the supply chain. Together with resilient and smart infrastructures, new concepts, innovative solutions and better cooperation of operators are needed for freight transport to minimise the negative impacts of disruptions, shorten the recovery and ease the transition time, while taking in due account emissions and energy consumption reductions as feasible.

Research and innovation actions will have to bring together stakeholders at various level, from supply chain (e.g. manufacturers, retailers, freight forwarders and logistics service providers), transport services (e.g. transport operators, enforcing authorities) and infrastructure networks (e.g. road / rail / inland waterways operators and transport node public authorities) to ensure a truly integrated and jointly acceptable approach.

Proposals will have to:

- Evaluate the resilience of strategic logistics networks and their related data and IT systems and propose management systems and operations, including alternative networks and transport services, to increase their resilience against natural, accidental and human triggered disruptive events. Proposed concepts and solutions should be suitable to increase the resilience and sustainability of the entire transport network. Lessons learnt from the COVID-19 crisis on how to make supply chains concurrently more resilient to large-scale shocks and environmentally friendly should be considered.
- Develop and demonstrate how synchro-modal approaches (shipment split and merge, dynamic synchronisation of multimodal schedules, realignment in case of disruptions etc.) provide resilience and sustainability by design to the freight transport and logistics networks in which these services are operated.
- Develop business intelligence capabilities, such as intermodal freight corridor performance and resilient measurement and assessment (e.g. evaluate what could be the alternative logistics networks and services to manage a failure in a main infrastructure in a transport corridor).
- Define cost-efficient and green new business models able to be adopted by the sector in the short-medium term and propose business/regulatory roadmaps and recommendations to support the adoption of the new proposed approaches and other solutions enhancing the capability to manage disruptions.

Social innovation is recommended when the solution is at the socio-technical interface and requires social change, new social practices, social ownership or market uptake.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d6-02-07;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspectionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>

17. /HORIZON EUROPE/ Designing inclusive, safe, affordable and sustainable urban mobility, deadline: 06. September 2022 17:00 Brussels time

Project results are expected to contribute to all of the following expected outcomes:

- Contribute to the objectives of the Climate Neutral and Smart Cities Mission by accelerating the transition towards climate neutrality in cities through the promotion of zero-emission, shared, active and human-centred mobility;
- Increase the extent and speed of the take-up and upscaling of innovative, best practice and replicable safe, affordable and sustainable urban mobility solutions in the living labs involved in the proposals (at least four cities/project and four follower cities, considering geographic diversity including in terms of regions' level of development) while facilitating the common lesson drawing and learning at European

level, in order to contribute to the priority of the Zero Pollution Action Plan's objectives, the Sustainable and Smart Mobility Strategy and the EU road safety policy framework 2021-2030 for a 50% reduction target for deaths and also for serious injuries by 2030;

- Solutions for at least ten unsafe areas/living labs in urban/peri-urban areas using innovative planning, design and implementation approaches, including but not limited to co-creation and/or citizen engagement, modelling and AI, digital and smart enforcement tools, dynamic space reallocation, with a view to reduce road safety risks, reducing exposure to air and noise pollution and the perceived feeling of unsafety for pedestrians and cyclists;
- Re-assess road and public space quality responding to needs of diverse groups (examples include but are not limited to: women, children, people with disabilities and older people); actions may include but are not limited to improving data collection for foot, bike and e-scooter traffic as well as the mechanisms for reporting pedestrian and cyclists, e-scooter injuries and deaths;
- Address proactively potential risk raised by expected increases in cycling and e-scooters;
- Rebalancing the attribution of public space to different modes of transport so that it better reflects the actual or desired local modal split as well as support reaching Vision Zero and zero-emission objectives, thus increasing road safety and quality of life in cities;
- Public space redesign actions targeted by the awarded projects should consider the circular economy principles, adaptation to climate change (in particular heatwaves), cross-sectoral synergies and not come at the cost of removing or deterioration of parks, trees or green recreational areas.

The European Union is facing a multitude of interconnected demographic, public health and environmental challenges: the climate is changing, road deaths are stagnating, urbanization is increasing, air quality standards are still breached in over 100 cities, obesity is rising and the population is ageing. But there is an increasing recognition at local, national and EU level that boosting the levels of active mobility, particularly walking and cycling, can play an important role in overcoming many of these challenges. Such a policy will also have economic benefits. Based on conservative estimates, even current levels of cycling in the EU produce benefits valued at around 150 billion euros per year.

During the Covid-19 pandemic, larger cities in Europe announced infrastructure changes to promote cycling and walking. For instance, they temporarily widened or created new cycle lanes to allow safe overtaking with physical distancing limits in mind while also implementing more 30km/h limits or 20km/h zones. The scope of this action is to support local authorities in accelerating mobility changes and address a significant concern, namely that people returning to work after the lockdown will seek out alternatives so that allocating public space, bicycles, pedestrians and public transport and reducing the space available for cars will encourage people to cycle, walk or use public transport rather than take the car.

Taking into account where possible the Sustainable Urban Mobility Indicators, projects should collect data on differences between patterns, behaviours and habits in relation to the mobility of various categories of vulnerable road users. Such data should where possible, be integrated with cross-domain data, to ensure interdependencies and co-benefits are identified. Projects should identify specific mobility needs and public space re-design needs, taking into account actual and perceived safety and security of women, children and accessibility for people with disabilities e.g. blind people in shared spaces, people in prams, wheelchairs and other supporting vehicles. Measures should be taken to implement necessary changes within the timeline of the project.

In addition, projects should also provide clear guidance to cities and Member States and Associated Countries on how to systematically incorporate the vulnerable road users dimension into infrastructure planning, including aspects of safety and security, accessibility, digital and smart tools for enforcing speed limits and vehicle access, design and operation or services and public spaces, including mobility hubs, public transport and shared mobility.

The projects associated to this call topic should envisage cooperation with the SUMP coordination platform, ELTIS and produce thematic a comprehensive topic guides stemming from the projects and accompanying the SUMP guidelines.

Projects should also take stock of lessons learnt during the period of imposition and lifting of Covid-related restrictions and propose suitable solutions for the future when it comes to resilience, safety and accessibility of public infrastructure.

A thorough evaluation, with a clear baseline in each city, should provide qualitative and quantitative information on the results of the local solutions implemented. The effectiveness of the proposed measures in achieving local policy objectives on safety, security and accessibility as well as on climate and pollution should be evaluated and the possible barriers to their broad take up and deployment identified, together with recommendations on how to overcome them. This should be accompanied by mechanisms for common lesson drawing and learning, within the project, between the projects funded under this topic and through the CIVITAS Initiative.

Proposals must plan for an active collaboration amongst the projects selected under this topic - for dissemination, evaluation and coordination - facilitated by and within the CIVITAS initiative through the signature of collaboration agreement. Proposals should ensure that appropriate provisions for activities and resources aimed at enforcing this collaboration are included in the work-plan of the proposal.

Detailed description of the specific activities and common actions that will be undertaken is not required at proposal stage and can be further defined during the grant agreement phase. Collaboration with the Mission Platform (HORIZON-MISS-2021-CIT-02-03) is essential and should take place through the CIVITAS initiative. The latter should establish, through a Memorandum of Understanding, clear links with the Mission portfolio for synergies and complementarities.

Proposals may include preparatory, take up and replication actions, research activities, as well as tools to support local planning and policy making. At the same time, projects would be expected to share their results and good practice with the upcoming European Urban Initiative of Cohesion Policy, the Urban Agenda for the EU and relevant smart specialisation partnerships e.g. the Safe and Sustainable Mobility Partnership or EIT Urban Mobility with its objectives to deploying user-centric, integrated eco-efficient and safe mobility solutions in urban areas.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-miss-2022-cit-01-01;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=1,2,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>

18. /HORIZON EUROPE/ Furthering the development of a materials acceleration platform for sustainable batteries, deadline: 06. September 2022 17:00 Brussels time

Batteries have complex and dynamic processes taking place in and between materials and at the interfaces/interphases within a battery cell. For each new battery chemistry explored, new challenges in understanding these processes are revealed. To accelerate the finding of new material's and their combinations for both existing and future battery chemistries the iterative and fragmented trial and error approach used today needs to be replaced since it is slow and insufficient.

To accelerate the discovery of battery interfaces, materials and new sustainable concepts with high energy and/or power performance there is a need to develop a fully autonomous and chemistry neutral Materials Acceleration Platform (MAP) for battery materials and interfaces. This is a key and long-term challenge for European battery community. The aim is to integrate advanced multi-scale computational modelling, materials synthesis, characterisation and testing to perform closed-loop autonomous materials findings and interphase engineering that would accelerate by at least a factor of five the discovery of new battery chemistries with ultra-high performances.

Building upon the shared data infrastructure, standards and protocols developed in the BATTERY 2030+ initiative, this call topic addresses the need of increasing the level of autonomy in the MAP-based discovery and development process. The proposal should also cover the contribution and collaboration to the BATTERY 2030+ large scale initiative.

Project results are expected to contribute to all of the following expected outcomes

- Develop new tools and methods for significantly accelerating the development and optimisation of battery materials and interfaces, in order to increase the competitiveness of the battery material and cell industry in Europe.
 - Demonstrate a fully autonomous battery-MAP capable of integrating computational modelling, materials synthesis and characterisation of both Li-ion and beyond Li-ion chemistries.
 - Scale-bridging, multi-scale battery interface models capable of integrating data from embedded sensors in the discovery and prediction process, e.g. to orchestrate proactive self-healing.
 - Community wide state-of-the-art collaborative environment to access data and utilise automated workflows for integrated simulations and experiments on heterogeneous sites, e.g., exploiting European HPC architectures and Large-scale facilities in collaboration with LENS and LEAPS.
 - Demonstrate a robotic system that is capable of material synthesis for inorganic, organic or hybrid compounds following standard synthesis routes via automated characterisation of intermediate and final products and autonomous decision-making.
 - Deploy predictive hybrid physics- and data-driven models for the spatio-temporal evolution of battery interfaces and demonstrate inverse design of a battery material/interface.
 - Infrastructure tools for secure remote data access, data analysis and predictive modelling: Develop a FAIR[1] data infrastructure for raw and curated experimental and modelling data, which can be accessed remotely and securely by relevant stakeholders, including industry. Develop the software infrastructure required to operate this platform, also with regard to future reproducibility and further exploitation of the results of the research activities. The software should provide specific access right and allow remote data access, complemented by distributed workflows using software-agnostic workflow engines that provide rapid-prototyping. Inverse materials design using hybrid physics- and data-driven battery interface genome models should also be demonstrated.
 - Automated high throughput characterisation and integrated experimental and computational workflows: High throughput, multimodal operando experimental techniques using standardised battery cells and established protocols should be optimised to perform effective screening of new materials and on-line diagnosis of realistic devices. A central objective is to establish, structure, operate and dynamically refine such facility platform to harmonise, mutualise and optimise the global demand for battery characterisation. This includes automated experimental and computational workflows and modules for data acquisition and multimodal/multiscale analysis. Particular attention should be paid to battery interfaces and direct observation of interfaces under dynamic conditions, which are key to improve the performances and the lifetime of batteries.
 - Autonomous synthesis robotics and orchestration software: The transition from low/no automated robotics for the synthesis of battery materials requires several R&I steps towards fully autonomous systems. Within the scope of this proposed call are partially autonomous systems following standard synthesis routes for inorganic and organic battery materials, especially also multi-step and high-temperature synthesis, that so far are challenging to automate for high throughput. AI-based orchestration and optimisation software modules and packages specifically targeting battery materials and interfaces are also central to the scope.
 - Inverse design and AI-assisted scale-bridging models for multiple time- and length-scale processes: To develop scale-bridging models correctly describing the multiple mechanisms occurring at atomistic scale and the mesoscopic scale on the cell level. The new model approaches should be able to incorporate data from the advanced sensing in virtual design optimisation and battery control algorithms for SoX estimation. Sensitivity analysis and uncertainty quantification of the developed SoX models is also a requirement to assess the robustness of the developed models. These models should achieve a challenge based rational balance of accuracy and computational effort. They should accurately describe the actual state of the system, but also enable diagnosis and prediction, e.g., when self-healing procedures should be initiated. Multiscale Modelling approaches should be developed for the control of safety between BOL (Beginning Of Life) and EOL (End of Life) of a battery system by different uses and diagnosing the safety state of a battery system by innovative methods.
- This topic implements the co-programmed European Partnership on 'Towards a competitive European industrial battery value chain for stationary applications and e-mobility'.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d2-01-03;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>

19. /HORIZON EUROPE/ Accelerating the deployment of new and shared mobility services for the next decade. Deadline: 06. September 2022 17:00 Brussels time

Project results are expected to contribute to all of the following expected outcomes:

Developing and pilot testing at least three different business models scenarios based on collaboration platforms or public-private partnerships/project, each of them contributing to:

- Congestion and air pollution reduction, reduced road risk, social inclusion, accessibility in each city (living lab).
- Increased share of new and shared mobility services (NMS) in the modal distribution, e.g. by 25% compared to a realistic baseline and financial viability of services.
- Integration of new and shared mobility services with public transport (e.g. filling service gaps and off-peak periods), in at least following three collaborative use cases/living lab that will facilitate data sharing and connectivity with remote/peri-urban areas.
- (Re-)Designing transport infrastructure or upgrading/reusing existing infrastructure elements (e.g. street profile/layout, intersection/junction design, priority corridors/lanes, dedicated parking, charging/docking stations, street surfaces/pavements, etc.) to accommodate new mobility modes, patterns and behaviours with highest safety levels while being resilient to various climate conditions.
- Developing results based policies as well as recommendations/each project in line with the Sustainable Urban Mobility Planning guidelines, to increase the understanding and take-up of new mobility services by local/regional authorities and public and private mobility service providers.
- Actively engage in communicating the common learning, lesson drawing, evaluation, dissemination and the exchange of knowledge and best practices, both within the project and with the wider urban mobility and transport community.

New and shared mobility services have shown that they have the potential to meet urban dweller's needs while at the same time bring about a more rational use of cars. However, in order to succeed at delivering "Mobility As a Service" and address the challenges that cities face, high-quality, user centric, and reliable new mobility solutions need to be offered as a credible alternative to the private car, coupled with safe and integrated infrastructure.

New solutions should be explored and deployed for newly designed or existing transport infrastructure to accommodate new and shared mobility services. Mobility services that could be considered are, for example: micro mobility, including bike/scoter sharing, demand responsive transport, car-pooling or car sharing.

New and shared mobility services should be proposed in at least 3 living labs/project in integrated, complementary and reinforcing packages of urban mobility and planning measures and new technological solutions, combining "push" and "pull" measures.

The services deployed should enable the idea of a social optimum in mobility from several perspectives (including socio-economic, environmental, health, accessibility; gender and inclusion; and safety and security aspects) while considering the implications for transport infrastructure and urban design.

The new services should also be tested beyond the commercially interesting urban cores, providing low and zero emission solutions for car-dependent suburban, peri-urban and rural areas linked to specific needs of diverse target groups such as populations with no access to public transport or affluent communities dependent on the private car.

Projects should test new and shared mobility services in mobility management (such as for companies, schools, attractions). Innovative approaches that respond to the needs of a large variety of users (such as families with children, people living in remote locations, commuters, housing developers) are expected. The role of marketing and communication, and approaches based on the co-creation of solutions should be considered.

Equally eligible would be cooperative approaches with employers willing to enter in a pilot to test a 'Mobility as a Service' (MaaS) type of service for their employees or with housing developers that are offering reduced parking spaces to residents and seek to offer smart and shared mobility solutions in return.

The proposals should also explore how the adaptation of transport infrastructure (e.g. bike-lanes or new street designs, profiles and layouts, etc...), promotes the use of shared, micro- and active- mobility, limiting risks and increasing safety while reducing transport congestion.

The results and impacts should be assessed using a wide range of quantitative indicators and compared with the situation before the implementation of the proposed solutions.

Public space redesign actions targeted by the awarded projects should not come at the cost of removing or deterioration of parks, trees or green recreational areas in the selected partner cities.

The potential adverse impacts some NMS may generate for example on high-density urban areas, on safety and security, travel demand, public transport use and traffic volumes, should be considered.

A demonstrated contribution to the implementation of the cities' Sustainable Urban Mobility Plans is expected. Proposals should collaborate with the CIVITAS initiative. They should demonstrate that the proposed approaches are truly innovative for the local context. Proposals should ensure that an appropriate geographical balance across Europe is achieved through twinning activities and other means to maximise impact without leaving anyone behind, and by demonstrating commitment of cooperation though their planned activities.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d6-02-04;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspectionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageSearchTablePageState>

20. /HORIZON EUROPE/ Development of high temperature thermal storage for industrial applications, deadline: 06. September 2022 17:00 Brussels time

Project results are expected to contribute to all the following expected outcomes:

- Short term (intraday or a couple of days) thermal storage systems for decoupling the heat generation from the heat use in industrial processes.
- Development of economically affordable new materials (including better basic understanding) for heat storage dedicated to medium to high temperature industrial processes.
- Better awareness of the challenges and benefits of heat storage in the relevant industrial sectors.

This topic aims to satisfy the need for decoupling the heat generation from the heat use in continuous or non-continuous industrial processes, in order to allow for heat exchanges between different industrial processes and so enable industrial symbiosis, or to generate heat during off-peak times and so provide energy demand flexibility.

In order to reach this goal all the following development areas need to be covered:

- Cost effective and new designs for high temperature storage of industrial heat, with minimal footprint. The large capacity storages in combination with long design lifetime, require the development of novel materials and designs.
- Development of materials and components: thermal storage materials, container construction, insulation technology, heat exchangers with aid of computational fluid dynamics.

- Integration and demonstration of the system at lab scale.
- Make a preliminary estimation of the future equipment cost for at least two industrial applications, to evaluate its economic potential.
- Make an analysis of the potential industrial applications and related benefits of the proposed storage system in EU27 and (if data are available) in the Associated States and, by extrapolation, at global level; a preliminary version of this analysis is expected already in the proposal. Define an exploitation strategy.
- Dissemination of the technical and economic benefits, notably (but not only) to the communities of the relevant Horizon Europe private-public partnerships.

This Destination addresses activities targeting the energy demand side, notably a more efficient use of energy as regards buildings and industry.

Demand side solutions and improved energy efficiency are among the most cost effective ways to support the transition to climate neutrality, reduce pollution and raw materials use, to create inclusive growth and employment in Europe, to bring down costs for consumers, to reduce our import dependency and redirect investments towards smart and sustainable infrastructure. The transition to a decentralised and climate neutral energy system will greatly benefit from the use of digital technologies which will enable buildings and industrial facilities to become inter-active elements in the energy system by optimising energy consumption, distributed generation and storage and vis-à-vis the energy system. They will also trigger new business opportunities and revenue streams for up-graded, innovative energy services which valorise energy savings and flexible consumption.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d4-01-05;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspectionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageSearchTablePageState>

21. /HORIZON EUROPE/ Demand response in energy-efficient residential buildings, deadline: 06. September 2022 17:00 Brussels time

Project results are expected to contribute to all of the following expected outcomes:

- Increased potential benefits, trust and acceptability of demand-response solutions for residential consumers.
- Advanced asset control and aggregation approaches that enable the participation of residential buildings in commercial demand response.
- Expanded pool of assets relevant for demand response in the residential sector.

Address the large but untapped potential of the residential sector for Demand Response with a view to support the energy transition at system level while respecting user privacy, comfort and ownership.

Proposals should:

- Investigate innovative demand response solutions for the residential sector, including new control modes and asset optimisation techniques involving as many devices as possible.
- Ensure that the proposed solutions comply with the principle of privacy by design and with best practices on data protection.
- Ensure that the proposed solutions allow to minimise the effort required to elicit user preferences, also investigating innovative approaches for user segmentation and engagement.
- Take due account the regulatory frameworks of the regions / countries in which the proposed solutions could be deployed in designing their innovation, and shaping related exploitation activities.
- Seek to the best consideration of social and economic enablers in the design of the innovative solutions.
- Consider social innovations, notably as new tools, ideas and methods leading to active citizen engagement and as drivers of social change, social ownership, and new social practices.

- Demonstrate that the proposed solutions lead to reducing costs of small demand response assets e.g. through improved models and faster data processing and, are scalable and replicable.
- Demonstrate that the proposed solutions are suitable for explicit demand response, or a combination of both explicit and implicit residential demand response.

Each project is expected to include at least three demonstration sites located in different climatic regions. The selected projects are expected to contribute to relevant BRIDGE activities, in particular with respect to data exchange and interoperability.

Clustering and cooperation with other relevant projects is strongly encouraged; in particular, liaison and synergies with the European Partnership on 'People-centric sustainable built environment'.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d4-01-01;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspectionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageTablePageState>

22. /HORIZON EUROPE/ Smarter buildings for better energy performance, deadline: 06. September 2022 17:00 Brussels time

Project results are expected to contribute to all of the following expected outcomes:

- More innovative, affordable, user-friendly and accessible products and systems to continuously monitor and improve the energy performance of buildings.
- Increased building energy performance through the optimisation and integration of different technologies, including energy renewable energy and storage, and services.
- Easier and more systematic use smart products and services to achieve savings where energy renovation is not an option.

- Higher replicability to increase number of buildings with smart building devices and digital infrastructure resulting in a higher smart readiness rating.

Improvement and cost-reduction of technologies to predict, assess, monitor and control in real time the energy performance of buildings, including energy efficiency, renewables, storage and their optimisation.

The proposal should:

- Develop new or enhance existing solutions for interoperability of systems, including between building automation and control systems (BACS) and other technical building systems and devices (including IoT ones), as well as between buildings and the grid.
- Investigate innovative approaches to ensure high level of security and privacy by design in buildings.
- Investigate approaches to reduce costs of systems allowing the integration of energy efficiency, renewables, storage and their optimisation.
- On the basis of the above, demonstrate the potential for energy savings from energy management solutions based on smart technical building systems (predictive controllers, smart thermostats, active sensors, smart lighting, etc.).
- Assess the contribution of proposed solutions to the enhancement of smart readiness of buildings as rated by the smart readiness indicator under Directive 2010/31/EU.
- Demonstrate that the developed solutions are user-friendly and ensure the desired indoor environment quality and user satisfaction.
- Where possible, demonstrate that such solutions can build flexibly on services/products not originally intended for energy management (e.g. a smart home system).
- Seek to ensure from the design phase that the project is developed with a view to integrate its results/deliverables under a digital building logbook.

Each project is expected to include at least three demonstration sites located in different climatic regions.

Clustering and cooperation with other relevant projects is strongly encouraged; in particular, liaison and synergies with the European Partnership on 'People-centric sustainable built environment'.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d4-01-03;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=;e=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=;ionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePage;rchTablePageState>

23. /HORIZON EUROPE/ Development and pilot demonstration of heat upgrade technologies with supply temperature in the range 150-250°C, deadline: 06. September 2022 17:00 Brussels time

Project results are expected to contribute to all the following expected outcomes:

- Validate the technical feasibility of industrial heat upgrade systems capable of supplying various industrial processes with useful heat in the (sink) temperature range of 150 - 250 °C from renewable heat sources (e.g. solar thermal), ambient heat or industrial waste heat.

- Development and demonstration at pilot scale (5 - 200 kWth).

- Better awareness of the challenges and benefits of heat upgrade in the relevant industrial sectors.

This topic aims to satisfy the need for low-medium temperature heat in the relevant industrial sectors, by upgrading lower temperature heat flows, including from renewable heat sources, ambient heat or industrial excess (waste) heat, as a cost-efficient way to improve energy efficiency and reduce the GHG emissions.

Available heat upgrade technologies, such as for example heat pumps, are limited to supply (sink) temperatures of 150°C. Innovative heat upgrade technologies have the potential to extend the temperature range up to 250°C, which would allow to cover more industrial applications.

In order to reach this goal all the following development areas need to be covered:

- Identify the target industrial processes which would benefit from this higher temperature heat upgrade technology, as excess (waste) heat sources and as users (heat sinks); make a preliminary assessment of the potential impacts of these industrial applications in terms of energy savings and GHG and air pollutant emissions reductions in the EU (and Associated States, if data are available), so as to maximise the impact and coverage of the most promising applications in the subsequent development step; estimate by extrapolation the benefits at global level. A preliminary analysis of the feasibility and GHG emissions reduction impact, of the proposed heat upgrade process is expected already in the proposal.

- Develop one or more heat upgrade technologies to raise the sink output temperature to the range 150 to 250°C. If needed investigate in new working fluids. Optimise the technical performances in terms of: temperature increase between sink inlet and sink outlet temperatures; temperature spread between source and sink temperatures; flexibility to source input temperature variations; higher sink thermal power potential; higher coefficient of performance.

- Integration and demonstration of at least one system at pilot scale, in conditions, as far as practical, similar to real industrial environment. The optional integration of renewable heat sources (e.g. solar thermal) as the input heat flow to be further upgraded, is in scope.

- Make a preliminary estimation of the future equipment cost for at least two industrial applications, to evaluate its economic potential; define an exploitation strategy.

- Dissemination of the technical and economic benefits, notably (but not only) to the communities of the relevant Horizon Europe private-public partnerships.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d4-01-04;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>

24. /HORIZON EUROPE/ Renewable-intensive, energy positive homes, deadline: 06. September 2022 17:00 Brussels time

Project results are expected to contribute to all of the following expected outcomes:

- Faster transition to the next generation of new constructions and renovation of cost-effective energy positive, climate neutral residential buildings.
- Streamlined integration of advanced smart technologies, renewable energy and storage solutions in residential construction and renovation projects.
- Faster transition to buildings and technical elements that are capable to adapt to different user profiles and lifestyles, improving air quality, human health and well-being parameters.
- Improved skills and competences among the workforce to support a rapid uptake of energy positive buildings in the residential sector.

The aim is to move beyond NZEB (nearly zero-energy buildings) for new constructions and to the extent possible, for renovations, and to streamline energy positive buildings, ensuring buildings can marry high energy performance with maximum flexibility and adaptability to a changing society in a cost-effective manner. This is a key challenge for the residential sector in the transformation to a highly energy-efficient and climate neutral EU building stock, where energy positive homes should become the norm.

Proposals should:

- Investigate and demonstrate approaches for the construction of new energy positive residential buildings (and /or the renovation of existing residential buildings), with a focus on multi-family, multi-storey buildings, encompassing all relevant areas:
- Design phase (aesthetic and technical solutions and their potential, passive and active strategies, sustainable design);
- Integrated design and construction concepts;
- Reconfigurable designs and technical elements capable of adapting to different user profiles and lifestyles;
- Selection and installation of affordable and high performance construction products and materials, building on previous projects;
- Innovative processes from manufacturing to construction site;
- Integration of renewable energy production for heating and cooling, electricity production (e.g. BIPV and BAPV), and where relevant, thermal and electrical storage, including shared at neighbourhood and district levels; for existing buildings, cost-effective, innovative solutions that allow to (at least) fully cover the energy consumption of the building (electricity, heat and cooling) with renewable energy;
- Advanced use of smart management technologies (for control and operational issues, Building Management Systems (BMS) or Building Automation Systems (BAS)) to improve air quality, human health and well-being parameters, to facilitate engagement and inclusiveness of occupants and support measurement of (as-built) building performance;
- Reuse and recycling of elements, components and materials, in particular in relation to buildings end of life, also minimizing embodied carbon emissions over the whole life cycle, in particular for smart technologies;
- Where applicable, the use of grey- and black-waters.
- Ensure that the cost of such buildings/apartments does not increase substantially compared to current local / regional practises.

Clustering and cooperation with other relevant projects is strongly encouraged; in particular, liaison and synergies with the Horizon Europe Partnership on 'People-centric sustainable built environment'. Each project is expected to include at least three demonstration sites located in different climatic regions. The demonstrations are expected to span a continuous interval of at least twelve months and to ensure measurement of (as-built) building performances. The relevant building professionals (e.g. architects, installers, workers, craftsmen, building managers) should be involved. Projects are expected to assess the sustainability of the proposed solutions in environmental, social and economic terms, considering among others the embodied carbon emissions from materials. The reuse and recycling of elements, components and materials of the proposed solutions at the end of life should be ensured.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d4-01-02;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>

25. /HORIZON EUROPE/ Technology Transfer Experiments for Innovative Laser-based Solutions, deadline: 29. July 2022 17:00 Brussels time

PULSATE will select high potential Technology Transfer Experiments (TTEs) to accelerate the design, development and uptake of Laser Based Advanced & Additive Manufacturing (LBAAM) by European Industry - especially SMEs. The experiment is an end-user-relevant case study:

- Demonstrating the use of LBAAM and the benefits it brings to the value chain from the end-user to the LBAAM provider
- Addressing SMEs business problems by using LBAAM. When the experiment is successfully concluded, it is resulting in a success story, inspiring the industry community.

The Technology Transfer Experiments have to be proposed by a Consortium including minimum 2 SMEs and/or slightly bigger companies acting as Technology Provider and at least one Manufacturing Company (end user/ Adopter).

TTE experiments have to address experimentation areas:

- Laser equipment integration, interoperability and robust automation
- Technology for cost effective laser-based manufacturing
- First part right and zero-defect laser-based production
- Flexible technology for small to large batches
- From CAD to PLM: data integration and flow.

Proposals should address technologies which are currently assumed from TRL5 to TRL7.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/competitive-calls-cs/381;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=31094502;programmePeriod=null;programCcm2Id=null;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>

26. /HORIZON EUROPE/ Industrial supply chain for silicon photonics, deadline: 21. September 2022 17:00 Brussels time

Proposals for this call shall:

- establish an (eventually distributed) industrially based (meaning pilot line established in an industrial environment) pilot line for a silicon photonics manufacturing platform (that is the pilot line must cover the full process for silicon photonics circuits (including if possible heterogeneous integration aspects for PICs) covering front and back end, integration and packaging (SiP) as well as wafer-level-test, chip testing, device testing to industrial standards with special attention to the scalability of the back-end packaging and testing.

- enable breakthroughs in silicon PIC platforms, overcoming their current limitations, by wafer-level heterogeneous integration of CMOS-uncommon materials or processed chiplets and prepare the transfer to the industrial silicon manufacturing platform.

- At least two demonstrators should be built including PICs made on the pilot line covering distinctive high volume applications such as LIDAR technology, consumer medical applications, etc.

This pilot line shall include innovations such as:

- develop innovative approaches to manufacturing techniques for heterogeneous integration, considering judicious choices with respect to scaling, performance, alignment accuracy, agility, reliability, non-recurring engineering costs (NREs), market potential.

- develop associated photonic process design kits (PDKs) of industrial grade and make a start to automated photonics ICs design tools

- develop innovative solutions to packaging and system in package appropriate to PICs

Proposals are encouraged:

- to allocate tasks to cohesion activities (if relevant) with the projects selected under the call HORIZON-CL4-2021-DIGITAL-EMERGING-01-07: Advanced Photonic Integrated Circuits (RIA)

- organise activities promoting the cooperation between the KDT JU and the European partnership for photonics,

- to develop a service-offer that will allow SMEs and other interested organizations to prototype and manufacture PICs

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-kdt-ju-2022-1-ia-focus-topic-2;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2;peCodes=1,2,8;statusCodes=31094502;programmePeriod=null;programCcm2Id=null;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=null;spect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDeliveryOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageStatePageState>

27. /HORIZON EUROPE/ Ecodesigned smart electronic systems supporting the Green Deal objectives, deadline: 21. September 2022 17:00 Brussels time

The European Green Deal is a new growth strategy that aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient, and competitive economy without net emissions of greenhouse gases as of 2050. The linear economic system in Europe consumes 14.6 tons of raw material per capita, which is twice the global figure. The transition to a circular society is necessary to decouple growth from resource consumption. The main driver for a resource-efficient economy is to extend the life cycle of products through increased lifetime, smarter and more efficient energy usage, repair, smart (predictive) maintenance or remanufacturing.

A reduced energy consumption, at electronic component, integrated board and system levels, allows to bring down both emissions and TCO (Total Cost of Ownership) for consumers and industry. However, the environmental footprint of ECS is huge. From design, through manufacturing to recycling of ECS disruptive innovations are necessary to enable sustainable ECS solutions. Ideally solutions should address the current geopolitical context and materials scarcity- and support autonomous European ECS value chains with the capacity to scale-up beyond EU27 perimeter.

Proposals shall cover along the lines of sustainability and recyclability:

- Develop innovative design and manufacturing methodologies for smart electronic systems, considering eco-design principles, including aspects related to life cycle, end-of life, standardisation, certification, easy repair and regulation compliance. Accessible environmental data repository and exchange framework should also be taken into account.
- Demonstrate that reliability-by-design principles maximise the durability of the smart electronic systems proposed or else allow second life of electronic components, products or systems in future. Important factors are repair-friendly product designs, solution to enable predictive maintenance and availability of spare parts, implemented through new business models.
- Target more efficient recovery and recycling solutions¹³ or/and optimisation of the use of resources (i.e. reuse/repair/repurpose, recovery and recycling of waste and materials with a special attention to rare earth metals) over the lifetime of smart electronic systems (for example by appropriate packaging design). Specifications for equipment and systems for sorting, waste stream separation, recycling processes of such electronic components.

And along the lines of increased energy efficiency:

- Innovative smart (AI Based) embedded software (intelligent firmware, energy-oriented OS support, power-aware resource management) capable to exploit the new energy characteristics and features of electronic components and their integration to deliver green embedded and cyber-physical systems that can be adopted in vertical domains (as for example mobility and industry) and result in significantly better energy usage.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-kdt-ju-2022-2-ria-focus-topic-2;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=31094502;programmePeriod=null;programCcm2Id=null;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>

28. /HORIZON EUROPE/ Social innovations for a fair green and digital transition, deadline: 02. August 2022 17:00 Brussels time

As set out in the EPSR Action Plan, including notably in relation to principles 1, 4, 5, 8, 12, 17 and 20, deep transformations such as climate change, environmental challenges and digitalisation are fast changing our daily lives and are putting Europe's social fabric to a test. Improving and adapting the EU's 'social rulebook' is at the heart of Europe's response to these changes, in accordance with the objectives of the European Green Deal and the Digital Agenda. This includes fostering an economy that works for people; investing in education and training, enhancing skills and equipping people for new green and digital jobs; promoting social progress and strengthening social protection; and promoting just transitions and ensuring solidarity between generations, leaving no one behind and providing access to essential services for all. Social innovation and social acceptance are key elements of a successful transformation.

The call aims to develop and test integrated and inclusive social innovation approaches - in schools or training centres, at work or in local communities, or other relevant environments - to foster just green and digital transitions, by:

- identifying and addressing (re-/up-) skilling and (re-)training needs stemming from new, green or digital products, services or technologies;
- fostering social acceptance and/or behavioural changes for more sustainable business models, consumption patterns and/or modes of transport;
- developing sustainability pathways and transformation tools for social economy actors;

- tailor solutions to the particular contexts starting from general models, such as the City Doughnut or macro level climate adaptation solutions, to other, business or local environments;
- promoting the implementation of the EPSR principle 20. Essential services, including energy, mobility and digital communications, in the context of the green and digital transitions.

The main objective is to enable and step up a fair green and digital transition by promoting and disseminating inclusive social innovation approaches in the areas above.

The foreseen results include:

- Greater uptake of new green and digital technologies
- New trainings to endow European citizens to make the most out the green and digital transitions
- Increase social acceptance and ownership for fairer and more sustainable business models
- Develop transformation tools for social economy actors
- Engage with local, regional, national authorities, as well as social partners and civil society at large to maximise the impact

The call aims to develop and test integrated and inclusive social innovation approaches - in schools or training centres, in the social economy, at work or in local communities, or other relevant environments - to foster just green and digital transitions, by pursuing and implementing one or several of the following activities: (i) identifying and addressing (re-/up-)skilling and (re-)training needs stemming from new, green or digital products, services or technologies; (ii) fostering social acceptance and/or behavioural changes for more sustainable business models, including in the social economy, consumption patterns and/or modes of transport; (iii) developing sustainability pathways and transformation tools for social economy actors; (iv) promoting the implementation of principle 20 of the European Pillar of Social Rights on access to essential services, including energy, mobility and digital communications, in the context of the green and digital transitions.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/esf-2022-soc-innov;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2,8;statusCodes=31000000;Codes=31094502;programmePeriod=null;programCcm2Id=null;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>

29. /HORIZON EUROPE/ Design of Customisable and Domain Specific Open-source RISC-V Processors, deadline: 21. September 2022 17:00 Brussels time

This call relates to the first general objective of the KDT-JU: reinforce the Union's strategic autonomy in electronic components and systems to support future needs of vertical industries and the economy at large.

The availability of an industrially supported library of open-source building blocks based on the RISC-V Instruction Set Architectures (ISA) and software frameworks for heterogeneous SoC integration is essential to have European sovereignty and maintain a competitive advantage for IC-developments in strategic European application domains.

The overall goal is to develop RISC-V to become a widespread industry standard alternative to today's proprietary Instruction Set Architectures (ISA). For this, RISC-V needs a powerful ecosystem comprising technology, business models and pioneering use-case applications. Consortia should include partners to cover this entire value chain.

The long-term strategy is to tackle domain specific solutions by a series of calls throughout KDT and other initiatives. Therefore, funding initiatives will be aligned and priorities will be set based on technologies and domain-specific applications. This call and

future calls concerning RISC-V will be based on a common, long-term roadmap for developing a RISC-V ecosystem. This common European roadmap includes efforts in Horizon Europe, EuroHPC, and KDT. Proposals need to give evidence of readiness to cooperate with and provide clear inputs to future RISC-V actions and/or initiatives.

Selected actions will be implemented as 'linked actions', i.e. they are linked with other actions selected under 'RISC-V' topics in past calls, this call and future calls. A collaboration agreement with other selected projects and future projects should be established, that sets out requirements for IP sharing, a common governance model, and conformity with specifications set by suitable industry bodies. Respective options under Article 3 and Article 7 of the Model Grant Agreement will be used to this end.

Proposal results shall contribute to:

- Customizable high-end RISC-V based multi-processor core (including dedicated hardware & supporting software IP, enhanced or new libraries of HW peripherals and software), to be applied for high-end computing or domain-specific applications, including features as a.o. dependability, reliability and security.
- Based on A, domain specific adaptations of RISC-V customisable processor solutions for safe, secure and reliable computationally intensive applications, e.g., for automotive and other sectors. Such solutions are expected to address appropriate functional and non-functional, high-performance requirements aiming at realizations on advanced technology, e.g. 22nm FDSOI, 16 nm FinFET or below.

Proposals should also lay the groundwork for future exploitation and further enhancements. If successful, those could be supported by future calls within KDT and/or other programs. Ultimately, the efforts should accelerate the developments in the field of open-source hardware and render it accessible to a wider community.

Special attention should be paid to the inclusion of industrial players and a user centric view in the consortia.

Further Information:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-kdt-ju-2022-1-ia-focus-topic-3;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1,2;peCodes=1,2,8;statusCodes=31094502;programmePeriod=null;programCcm2Id=null;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDeliveryOfDelivery=null;sortQuery=startDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageStatePageState>

30. /Sonstige/ EU-Hochschulnetzwerk - Gutachter:in werden: Gutachtertätigkeit im Rahmen der EU-Forschungsförderung, 16.Mai 2022 14 Uhr

Im online-Seminar erhalten Sie Informationen rund um das Thema Gutachtertätigkeit im Rahmen der EU-Forschungsförderung. Im Anschluss daran besteht die Möglichkeit, Fragen zu stellen. Neben einer Darstellung des Registrierungsprozesses im Funding & Tender Opportunities-Portal der EU werden u.a. die folgenden Themen angesprochen:

- Aufbau des Expertenprofils
- Auswahl der Gutachter:innen durch die Kommission
- Zeitlicher Umfang der Gutachtertätigkeit
- Vertragliche Grundlagen
- Richtlinien für die Begutachtung von Anträgen
- Interdisziplinarität im Begutachtungsprozess.

Zudem wird Prof. Dr. Peter Bayer (Institut für Geowissenschaften und Geographie//Angewandte Geologie, Martin-Luther-Universität Halle-Wittenberg) von seinen Erfahrungen als Gutachter berichten.

Sie können sich formlos per E-Mail anmelden bei: sabine.pabst@verwaltung.uni-halle.de

Weitere Informationen:

https://www.euhochschulnetz-sachsen-anhalt.de/Veranstaltungen+des+EU_Hochschulnetzwerks/Gutachter_in+werden_+Gutachtert%C3%A4tigkeit+im+Rahmen+der+EU_Forschungsf%C3%B6rderung-p-6016.html

31. /Sonstige/ Europa Café: Schreiben eines erfolgreichen EU-Antrages - Neuer Trend ,,

Das online-Seminar behandelt sowohl die Antragstellung eines ‚klassischen‘ EU-Projekts als auch eine Neuerung in der Projektabrechnung, die sog. „Lump Sums“ (Pauschalen).

Im Themenbereich Antragstellung werden Informationen zur Struktur eines Antrags vermittelt, das Antragstemplate vorgestellt sowie Hinweise und Tipps zur Antragstellung gegeben. Vor allem die Bewertungskriterien Excellence, Impact und Implementation werden näher beleuchtet und die zu beachtenden Querschnittsaspekte erläutert.

Im zweiten Teil der Veranstaltung wird es um die sogenannte Lump Sum-Förderung von Forschungs- und Innovationsprojekten gehen. Die Kommission hatte im letzten Rahmenprogramm bereits einen Piloten zum Einsatz dieser Pauschalbeträge durchgeführt und möchte diese nun in Horizont Europa ausweiten. Sie erfahren im Seminar was Lump Sum-Förderung für Ihr Projekt bedeutet und was Sie bereits bei der Antragstellung beachten müssen.

Die Teilnahme an der Veranstaltung ist kostenfrei. Mit Ihrer Anmeldung stimmen Sie der Verarbeitung Ihrer personenbezogenen Daten zu. Die Anmeldung erfolgt formlos per E-Mail bei sara.wichmann@ovgu.de oder robina.geupel@verwaltung.uni-halle.de

Weitere Informationen:

https://www.euhochschulnetz-sachsen-anhalt.de/Veranstaltungen+des+EU_Hochschulnetzwerks/Europa+Caf%C3%A9+_+Online_Seminarreihe+zusammen+mit+dem+EEN-p-5850.html

32. /Sonstige/ Contact Research Funding Advice of the Otto von Guericke University Magdeburg

For questions about funding opportunities, specific calls for proposals, help with submitting applications and project support, please contact the department for Research Funding Advice/EU-University Network of Otto von Guericke University Magdeburg.

Information on current events, funding structures and contact online at:

<https://www.ovgu.de/en/ContactResearchFundingAdvice>

<https://www.euhochschulnetz-sachsen-anhalt.de/en/>
