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# Horizon 2020 Work Programme for Research & Innovation 2018-2020

*H2020 Transport info day – 7 October 2019*

## Automated Road Transport (ART) and Batteries (BAT) Calls

Parallel Session III A

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# Horizon 2020 Work Programme for Research & Innovation 2018-2020

*H2020 Transport info day – 07 October 2019*

Efficient and safe connected and automated heavy-duty vehicles in real logistics operations

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Large-scale cross-border demonstration of connected and highly automated driving functions for passenger cars

**DT-ART-05-2020**

**DT-ART-06-2020**

#H2020Transport

Tom Alkim  
Future Urban & Mobility Systems, UNIT D2  
European Commission – DG RTD

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# H2020 calls on “Automated Road Transport”



□ Budget: € 300 Mio (2014-2020)

□ Focus

- Large-scale demos of automated driving systems for passenger cars, trucks and urban transport
- Safety and end user acceptance
- Road infrastructure to support automation
- Traffic management solutions
- Connectivity for automation
- Testing and validation procedures
- Assessment of impacts, benefits and costs of CAD systems
- Support for cooperation and networking activities
- Human centered design of AV

5 Calls for proposals





Human centered design for the new driver role in highly automated vehicles

**Opened: 4 December 2018**

**Closed: 24 April 2019**



Developing and testing shared, connected and cooperative automated vehicle fleets in urban areas for the mobility of all



Efficient and safe connected and automated heavy commercial vehicles in real logistics operations

**Opening: 3 December 2019**

**Closing: 21 April 2020**



Large-scale, cross-border demonstration of highly automated driving functions for passenger cars

**More information:**

**<https://ec.europa.eu/inea/en/horizon-2020/automated-road-transport>**

# Topic DT-ART-05-2020 (RIA)

## Efficient and safe connected and automated heavy commercial vehicles in real logistics operations

### Scope

- Develop, design, test and validate enhanced connected and automated vehicle technologies for heavy commercial vehicles
- Test and demonstrate innovative, efficient and safe connected and automated heavy commercial vehicles for real logistics operations on hub-to-hub corridors, on open roads in mixed traffic or in confined areas
- Enhanced interaction between automated heavy commercial vehicles and their users and other vulnerable road users
- Innovative services for automated freight logistics of individual transport units

### Estimated EC contribution per proposal

- EUR 15-20 million

Topic DT-ART-05-2020 (RIA)

## Efficient and safe connected and automated heavy commercial vehicles in real logistics operations

### Potential

- Connected and automated driving systems for heavy commercial vehicles have great potential to bring a disruptive change to the trucking industry, fleet operators and the whole logistics sector
- They can improve safety and efficiency of freight transport and make vehicle operations more comfortable
- Fuel efficiency gains can be achieved through automated truck operations, such as platooning
- Positive impacts can be expected when highly automated systems will be used in logistics operations going from hub to hub including both operations in mixed traffic and in confined areas

# Topic DT-ART-05-2020 (RIA)

## Efficient and safe connected and automated heavy commercial vehicles in real logistics operations

### Specific Challenges to be addressed

before connected, cooperative and automated driving technologies for heavy commercial vehicles can be widely deployed:

- vehicle technologies
- driver/user interaction/collaboration
- vehicle-to-vehicle and vehicle-to-infrastructure communication
- operational challenges in confined areas (ports, logistics terminals, consolidation centers, truck parkings, etc.)
- operational challenges in mixed traffic on public roads

Topic DT-ART-06-2020 (RIA)

## Large-scale, cross-border demonstration of connected and highly automated driving functions for passenger cars

### Scope

- Demonstrate highly automated driving technologies and systems for passenger cars (SAE level 4 ) for different use cases in particularly challenging and complex environments that are expected to be introduced into the market after 2020
- Test innovative connectivity technologies
- Conduct cross-border demonstrations to ensure that new services and systems are compatible and interoperable at European level
- Develop and test solutions for smooth communication and interaction between automated vehicles and their users and other (vulnerable) road users

### Estimated EC contribution per proposal

- EUR 15-30 million



Topic DT-ART-06-2020 (RIA)

## Large-scale, cross-border demonstration of connected and highly automated driving functions for passenger cars

### Specific challenges

Significant progress has been made in developing technologies for connected and automated driving in Europe and many large-scale demonstration projects are already ongoing

Several challenges remain, in particular for highly automated vehicles, before we will see them on the roads

- HAVs must achieve very high levels of availability and effectiveness of their functions
- Performance of HAVs has to be better compared to the performance of human drivers
- Seamless cross-border functionality has to be guaranteed
- user and customer expectations and acceptance, market potentials and risks need to be better understood

# Thank you!

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# Horizon 2020 Work Programme for Research & Innovation 2018-2020

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Next-generation and realisation of  
battery packs for BEV and PHEV.

**LC-BAT-10-2020**

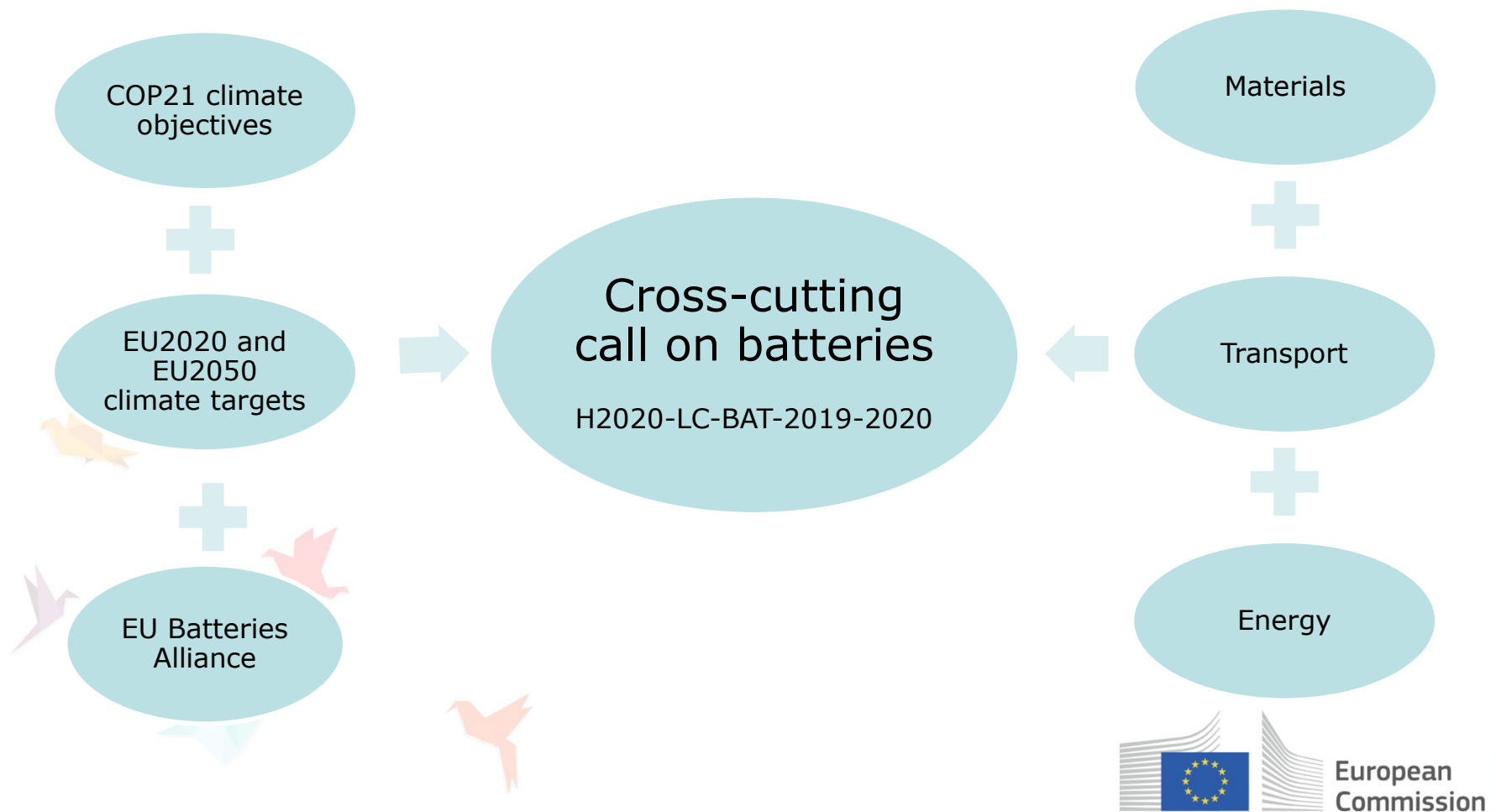
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Johan Blondelle  
European Commission – DG RTD

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# Cross-cutting activities: Building a Low-Carbon, Climate Resilient Future: Next-Generation Batteries



## Topic overview

### ***Building a Low-Carbon, Climate Resilient Future: Next-Generation Batteries***

LC-BAT-8-2020      Next-generation batteries for stationary energy storage

LC-BAT-9-2020      Hybridisation of battery systems for stationary energy storage

**LC-BAT-10-2020      Next generation and realisation of battery packs for BEV and PHEV**

**LC-BAT-11-2020      Reducing the cost of large batteries for waterborne transport**

### ***A large-scale research initiative on Future Battery Technologies***

LC-BAT-12-2020      Novel methodologies for autonomous discovery of advanced battery chemistries

LC-BAT-13-2020      Sensing functionalities for smart battery cell chemistries

LC-BAT-14-2020      Self-healing functionalities for long lasting battery cell chemistries

LC-BAT-15-2020      Coordinate and support the large scale research initiative on Future



**LC-BAT-10-2020**  
**(IA)**

Transport

## **Next generation and realisation of battery packs for BEV and PHEV**

**Challenge:** To accelerate the mass market take-up of BEV and PHEV - passenger cars

**Scope:** Design of advanced battery packs and systems; solutions and processes for the sustainable dismantling and recycling; Flexible advanced battery management system with advanced functionalities of battery management systems to enable control of modules and packs and their remote maintenance; compatible with high-power ultra-fast charging; performance-related test procedures; Concept validation and safety test procedures

**Expected impact:** improved performance and knowledge of the EV through reducing system weight, reducing charging time, extended battery life; improved circularity.

**Estimated EC contribution per proposal:** EUR 8 - 10 million

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# Horizon 2020 Work Programme for Research & Innovation 2018-2020

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## Reducing the cost of large batteries for waterborne transport

**LC-BAT-11-2020**

Peter Crawley  
European Commission – DG RTD

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# LC-BAT-11: Reducing the cost of large batteries for waterborne transport

## Challenge:

- Large battery packs are increasingly used to improve efficiency and to eliminate emissions from waterborne transport.
- The cost of waterborne transport batteries is up to ten times higher than an equivalent automotive battery.
- High cost is an important barrier to increasing the deployment of both hybrid and fully battery electric shipping.
- Unlike other transport modes, space, weight and consequently battery power density for waterborne transport is usually secondary to the systems total life cycle cost.
- Causes of higher cost include; production processes, safety certification, fire suppression, lower economies of scale and higher assembly costs.
- Challenge to substantially reduce the cost of large waterborne transport battery systems and cells.

# LC-BAT-11: Reducing the cost of large batteries for waterborne transport

## Address all bullets:

- Research and develop large (applicable to minimum 1MWh systems) waterborne transport battery system and/or battery cells that are substantially cheaper on a total cost basis.
- Trials and testing to prove technology and manufacturing processes.
- Address production efficiency & requirements for type approval from relevant authorities, including risk based safety assessment.
- Develop a marine battery certification methodology with objective of: validating and verifying safety (also considering cooling system), include test method standardisation and tools to cut certification costs.
- Considering different vessel types, address battery system integration.
- Undertake cost benefit analysis, assess end of life strategies, develop business case & potential finance models.

**RIA: Suggested contribution EUR 8-12 million**

**Total topic budget EUR 20 million**

# LC-BAT-11: Reducing the cost of large batteries for waterborne transport

## Impact:

- Substantially reduce the lifetime cost of large waterborne battery systems.
- Enhance the competitiveness of European industry within the waterborne battery market.
- Cut greenhouse gas emissions from waterborne transport.
- Increase the European skills base in large battery technology and manufacturing processes.
- Support European jobs and growth.
- Increase confidence in waterborne battery technology investment.
- Speed up the transition of most waterborne short range freight and ferry services towards zero emissions.

# Thank you!

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