Aventi

Hva går de forskjellige CCAM utlysningene ut på?

Webinar: ITS Norway/ENIT - Bygge CCAM Norsk/Nordisk konsortium - 19. Mars 2021

Increase safety in road transport

Reduce negative impacts from road transport on environment

Strengthen competitiveness of European industries

Ensuring inclusive mobility and goods access for all

CCAM
CONNECTED, COOPERATIVE & AUTOMATED MOBILITY
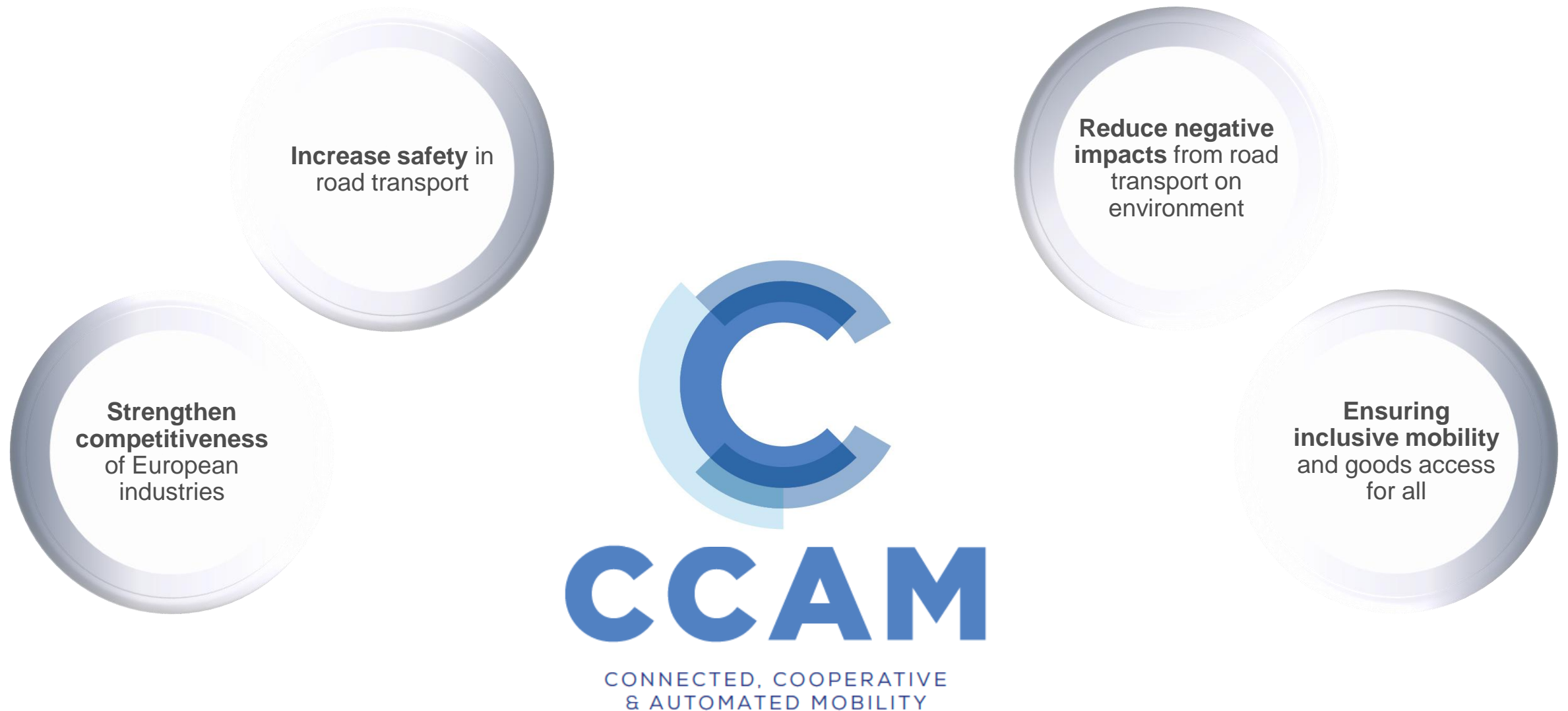
European leadership in safe and sustainable road transport through automation

Horizon Europe Work Programme 2021-2022: Climate, Energy, and Mobility.
Call: Safe, Resilient Transport and Smart Mobility services for passengers and goods

European Commission

EN

Horizon Europe

Work Programme 2021-2022

8. Climate, Energy and Mobility

DISCLAIMER

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Call - Safe, Resilient Transport and Smart Mobility services for passengers and goods

HORIZON-CL5-2021-D6-01

Conditions for the Call

Indicative budget(s)[148]

Topics	Type of Action	Budgets (EUR million) 2021	Expected EU contribution per project (EUR million)[149]	Number of projects expected to be funded
Opening: 15 Apr 2021 Deadline(s): 19 Oct 2021				
HORIZON-CL5-2021-D6-01-01	IA	15.00	6.00 to 8.00	2
HORIZON-CL5-2021-D6-01-02	RIA	15.00	12.00 to 15.00	1
HORIZON-CL5-2021-D6-01-03	IA	18.00	7.00 to 9.00	2
HORIZON-CL5-2021-D6-01-04	RIA	12.00	5.00 to 6.00	2
HORIZON-CL5-2021-D6-01-05	RIA	8.00	3.00 to 4.00	2
HORIZON-CL5-2021-D6-01-06	RIA	6.00	5.00 to 6.00	1
HORIZON-CL5-2021-D6-01-07	IA	15.00	7.00 to 8.00	2
HORIZON-CL5-2021-D6-01-08	IA	15.00	7.00 to 8.00	2
HORIZON-CL5-2021-D6-01-09	IA	23.00	Around 7.50	3
HORIZON-CL5-2021-D6-01-10	RIA	12.00	4.00 to 5.00	3
HORIZON-CL5-2021-D6-01-11	RIA	8.00	4.00 to 5.00	2
HORIZON-CL5-2021-D6-01-12	RIA	8.00	3.00 to 5.00	2

[148] The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.
The Director-General responsible may delay the deadline(s) by up to two months.
All deadlines are at 17.00.00 Brussels local time.
The budget amounts are subject to the availability of the appropriations provided for in the general budget of the Union for years 2021 and 2022.

[149] Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

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aviation activities, such as SESAR / Transforming the European ATM System partnership. The proposals may include the explicit commitment from the European Aviation Safety Agency (EASA) to assist or to participate in the actions[171].

In order to achieve the expected outcomes with increased resources and impact, international cooperation can be foreseen with third countries with relevant capacities in this domain, while ensuring that the respect of European IPR, interests and values is strictly guaranteed.

Synergies with other transport modes and safety/security critical sectors adopting more automation is welcomed, in particular on risk assessment and pre-normative research to ensure fit-for-purpose rulemaking and management systems and a high level of cyber-attack protection.

Synergies with other topics in Horizon Europe can be exploited such as in Cluster 4 e.g. HORIZON-CL4-2021-DIGITAL-EMERGING-01-02 (Software for low-power operation at the edge), HORIZON-CL4-2021-DIGITAL-EMERGING-01-11 (Pushing the limit of robotics cognition), in Cluster 3 e.g. HORIZON-CL3-2021-INFRA-01-01 (European infrastructures and their autonomy safeguarded against systemic risks), as well as with other EU programmes such as Connecting Europe Facility (CEF), NextGenerationEU and Digital Europe.

Call - Safe, Resilient Transport and Smart Mobility services for passengers and goods

HORIZON-CL5-2022-D6-01

Conditions for the Call

Indicative budget(s)[172]

Topics	Type of Action	Budgets (EUR million) 2022	Expected EU contribution per project (EUR million)[173]	Number of projects expected to be funded
Opening: 14 Oct 2021 Deadline(s): 12 Jan 2022				

- Projects For Policy (P4P) on Aviation Safety https://publications.europa.eu/en/publication-detail/-/publication/b4690ade-3169-11e8-b5fe-01aa75ed71a1/language-en/format-PDF/source-75248795
- Coordination-support action OPTICS2 https://www.optics-project.eu/narratives/

[171] https://www.easa.europa.eu/domains/safety-management/research

[172] The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.
The Director-General responsible may delay the deadline(s) by up to two months.
All deadlines are at 17.00.00 Brussels local time.
The budget amounts are subject to the availability of the appropriations provided for in the general budget of the Union for years 2021 and 2022.

[173] Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

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as supporting a European navigational hazards data base. The exploitation of Galileo GNSS services and eventually other space based services is to be foreseen.

d. Propose solutions to the tracking and recovery of lost containers in cases where those containers pose a risk to navigation and the marine environment.

Containership fires

a. Undertake a systematic analysis of containership fires' causal factors (including malicious and erroneous cargo declarations), the currently established responses based on on-board means, and the consequences, including the potential consequence of a fire in coastal regions with an onshore wind.

b. Research should address the range of risks, ship and cargo system design issues, fire detection and firefighting methods, accident management methodologies, and pertinent regulatory issues in order to greatly reduce the risk of fires at sea.

c. Special attention should be given to fires within cargo areas (in holds and on deck) for which relevant risk control options should be presented, analysed and the effects of their application validated though computer simulation and model tests, including those for specific firefighting equipment.

d. In cooperation with relevant authorities (EMSA, European flag states, coast guards, rescue services) accident management strategies and plans to minimise the consequences from containership fires in European coastal and port areas should be developed. This should include an analysis of and proposition for stand-by equipment and assets.

e. Outcomes and strategies should be widely communicated to facilitate best practice and develop specific training plans, including practical exercises on a realistic scale, for crews in cooperation with operators and seafarer organisations.

Call - Safe, Resilient Transport and Smart Mobility services for passengers and goods

HORIZON-CL5-2022-D6-02

Conditions for the Call

Indicative budget(s)[178]

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per	Number of projects

[178] The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.
The Director-General responsible may delay the deadline(s) by up to two months.
All deadlines are at 17.00.00 Brussels local time.
The budget amounts are subject to the availability of the appropriations provided for in the general budget of the Union for years 2021 and 2022.

Transport-relaterte utlysninger til 3,8 millarder kroner

Table 1:

Topics	Type of Action	Budgets (EUR million) 2021	Expected EU contribution per project (EUR million)[2]	Number of projects expected to be funded
Opening: 15 Apr 2021 Deadline(s): 19 Oct 2021				
HORIZON-CL5-2021-D6-01-01	IA	15.00	6.00 to 8.00	2
HORIZON-CL5-2021-D6-01-02	RIA	15.00	12.00 to 15.00	1
HORIZON-CL5-2021-D6-01-03	IA	18.00	7.00 to 9.00	2
HORIZON-CL5-2021-D6-01-04	RIA	12.00	5.00 to 6.00	2
HORIZON-CL5-2021-D6-01-05	RIA	8.00	3.00 to 4.00	2
HORIZON-CL5-2021-D6-01-06	RIA	6.00	5.00 to 6.00	1
HORIZON-CL5-2021-D6-01-07	IA	15.00	7.00 to 8.00	2
HORIZON-CL5-2021-D6-01-08	IA	15.00	7.00 to 8.00	2
HORIZON-CL5-2021-D6-01-09	IA	23.00	Around 7.50	3
HORIZON-CL5-2021-D6-01-10	RIA	12.00	4.00 to 5.00	3
HORIZON-CL5-2021-D6-01-11	RIA	8.00	4.00 to 5.00	2
HORIZON-CL5-2021-D6-01-12	RIA	8.00	3.00 to 5.00	2
HORIZON-CL5-2021-D6-01-13	IA	12.00	4.00 to 8.00	2
Overall indicative budget		167.00		

Table 2:

Topics	Type of Action	Budgets (EUR million) 2022	Expected EU contribution per project (EUR million)[13]	Number of projects expected to be funded
Opening: 14 Oct 2021 Deadline(s): 12 Jan 2022				
HORIZON-CL5-2022-D6-01-01	IA	50.00	20.00 to 25.00	2
HORIZON-CL5-2022-D6-01-02	RIA	8.00	6.00 to 8.00	1
HORIZON-CL5-2022-D6-01-03	RIA	8.00	7.00 to 8.00	1
HORIZON-CL5-2022-D6-01-04	IA	10.00	4.00 to 5.00	2
HORIZON-CL5-2022-D6-01-05	RIA	12.00	5.00 to 6.00	2
HORIZON-CL5-2022-D6-01-06	RIA	13.00	4.00 to 4.33	3
HORIZON-CL5-2022-D6-01-07	IA	9.00	4.00 to 8.00	1
HORIZON-CL5-2022-D6-01-08	IA	12.00	3.50 to 6.00	2
Overall indicative budget		122.00		

Table 3:

Topics	Type of Action	Budgets (EUR million) 2022	Expected EU contribution per project (EUR million)[179]	Number of projects expected to be funded
Opening: 28 Apr 2022 Deadline(s): 06 Sep 2022				
HORIZON-CL5-2022-D6-02-01	IA	15.00	7.00 to 8.00	2
HORIZON-CL5-2022-D6-02-02	IA	15.00	7.00 to 8.00	2
HORIZON-CL5-2022-D6-02-03	RIA	8.00	Around 4.00	2
HORIZON-CL5-2022-D6-02-04	IA	20.00	8.00 to 10.00	2
HORIZON-CL5-2022-D6-02-05	RIA	15.00	4.00 to 5.00	3
HORIZON-CL5-2022-D6-02-06	IA	10.00	Around 5.00	2
HORIZON-CL5-2022-D6-02-07	RIA	8.00	Around 4.00	2
Overall indicative budget		91.00		

CCAM Partnership utlysninger til 1,6 millarder kroner

| Topic #	CCAM Cluster	Topic title	Year	Type of action	Budget (EUR million)	# of projects expected to be funded
HORIZON-CL5-2021-D6-01-01	2	More powerful and reliable on-board perception and decision-making technologies addressing complex environmental conditions	2021	IA	15	2
HORIZON-CL5-2021-D6-01-02	3	Common approaches for the safety validation of CCAM systems	2021	RIA	15	1
HORIZON-CL5-2021-D6-01-03	4	Physical and Digital Infrastructure (PDI), connectivity and cooperation enabling and supporting CCAM	2021	IA	18	2
HORIZON-CL5-2021-D6-01-04	5	Cyber secure and resilient CCAM	2021	RIA	12	2
HORIZON-CL5-2021-D6-01-05	6	Analysis of socio-economic and environmental impacts and assessment of societal, citizen and user aspects for needs based CCAM solutions	2021	RIA	8	2
HORIZON-CL5-2021-D6-01-06	7	Framework for better coordination of large-scale demonstration pilots in Europe and EU-wide knowledge base	2021	RIA	6	1
HORIZON-CL5-2022-D6-01-01	1	European demonstrators for integrated shared automated mobility solutions for people and goods	2022	IA	50	2
HORIZON-CL5-2022-D6-01-02	2	Reliable occupant protection technologies and HMI solutions to ensure the safety of highly automated vehicles	2022	RIA	8	1
HORIZON-CL5-2022-D6-01-03	3	Human behavioural model to assess the performance of CCAM solutions compared to human driven vehicles	2022	RIA	8	1
HORIZON-CL5-2022-D6-01-04	4	Integrate CCAM services in fleet and traffic management systems	2022	IA	10	2
HORIZON-CL5-2022-D6-01-05	5	Artificial Intelligence (AI): Explainable and trustworthy concepts, techniques and models for CCAM	2022	RIA	12	2
			Total 2021		74	
			Total 2022		88	
					162	

Technology Readiness Levels (TRL)

- TRL 1: basic principles observed
- TRL 2: technology concept formulated
- TRL 3: experimental proof of concept
- TRL 4: technology validated in lab
- TRL 5: technology validated in relevant environment
- TRL 6: technology demonstrated in relevant environment
- TRL 7: system prototype demonstration in operational environment
- TRL 8: system complete and qualified
- TRL 9: actual system proven in operational environment

TRL 1   TRL 2   TRL 3   TRL 4   TRL 5   TRL 6   TRL 7   TRL 8   TRL 9
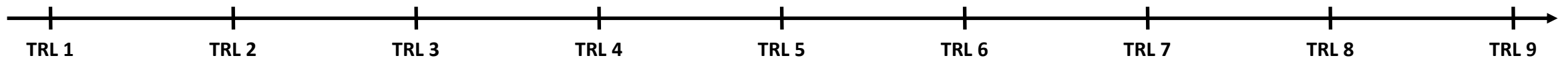
HORIZON-CL5-2021-D6-01-01: More powerful and reliable on-board perception and decision-making technologies addressing complex environmental conditions (CCAM Partnership)

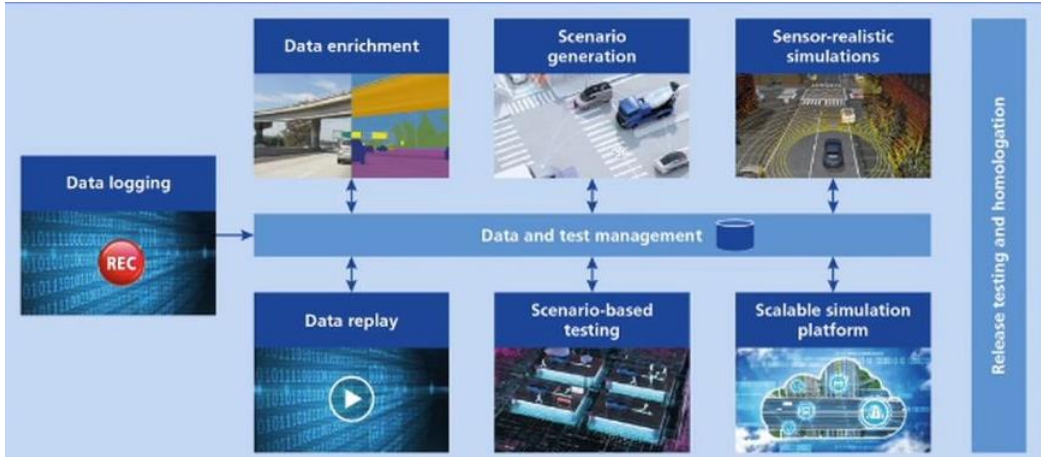| Specific conditions	
Expected EU contribution per project	The EU estimates that an EU contribution of between EUR 6.00 and 8.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 15.00 million.
Type of Action	Innovation Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: The funding rate is up to 60% of the eligible costs. This funding rate applies both to members and non-members of the partnership, except for non-profit legal entities, where the funding rate is up to 100% of the total eligible costs.
Technology Readiness Level	Activities are expected to achieve TRL 6-7 by the end of the project – see General Annex B.

Develop sensors and software to achieve reliable automated driving functionality SAE level 4 for a wide range of traffic scenarios under demanding conditions.
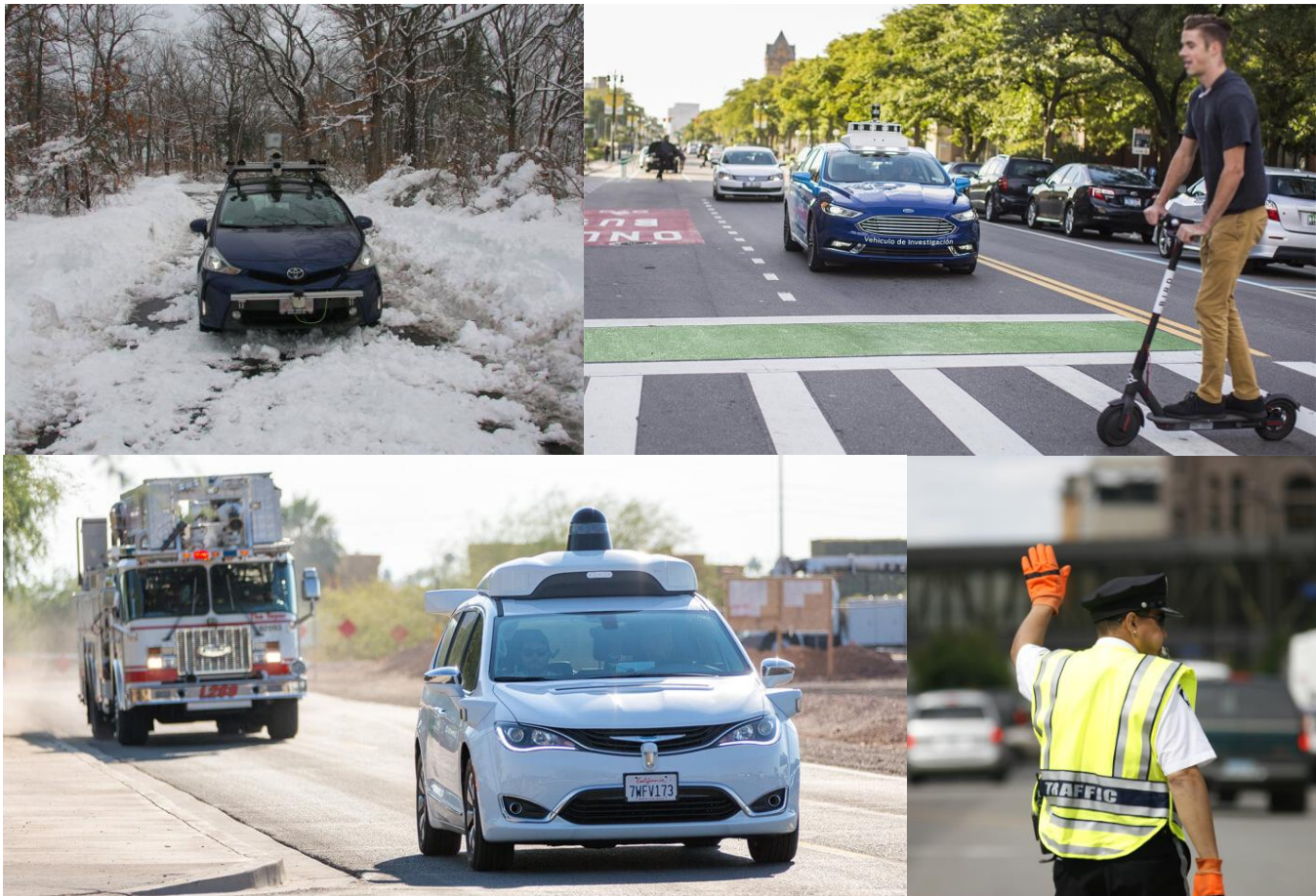
HORIZON-CL5-2021-D6-01-02: Common approaches for the safety validation of CCAM systems (CCAM Partnership)

Specific conditions	
Expected EU contribution per project	The EU estimates that an EU contribution of between EUR 12.00 and 15.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 15.00 million.
Type of Action	Research and Innovation Actions
Technology Readiness Level	Activities are expected to achieve TRL 5 by the end of the project – see General Annex B.

Develop methodologies and tools for safety validation of CCAM systems, so that hundreds of millions of test kilometers can be driven in simulators, reducing the need to test on physical roads. The simulators will use relevant driving scenarios from an EU wide database.

HORIZON-CL5-2021-D6-01-03: Physical and Digital Infrastructure (PDI), connectivity and cooperation enabling and supporting CCAM (CCAM Partnership)
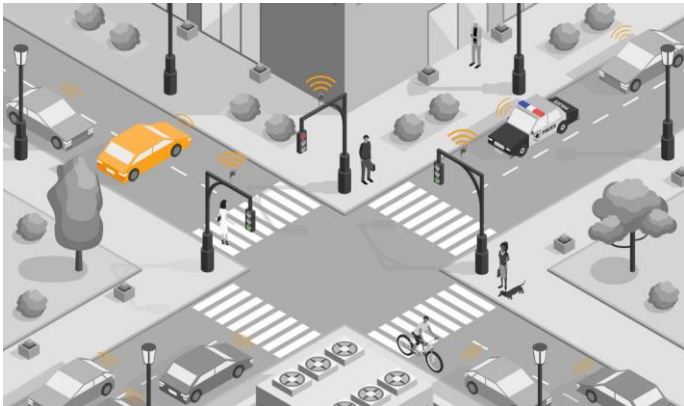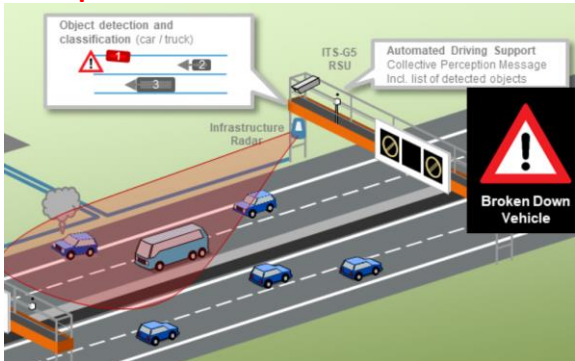
Specific conditions: Proposals can address either area A or area B	
Expected EU contribution per project	The EU estimates that an EU contribution of between EUR 7.00 and 9.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 18.00 million.
Type of Action	Innovation Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: The funding rate is up to 60% of the eligible costs. This funding rate applies both to members and non-members of the partnership, except for non-profit legal entities, where the funding rate is up to 100% of the total eligible costs.
Technology Readiness Level	Activities are expected to achieve TRL 6-7 by the end of the project – see General Annex B.

Area A: PDI to help vehicle manufacturers expand their ODD (Operational Design Domain), including extension of the ISAD concept (Infrastructure Support Levels for Automated Driving).
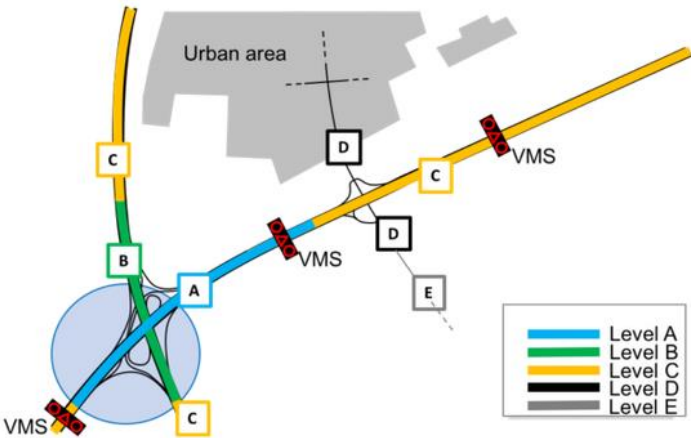
Area B: Trusted and reliable hybrid C-ITS communication (5.9 GHz + Cellular) to enable next generation C-ITS services, CCAM services and advanced traffic management like collective perception and cooperative maneuvers.

HORIZON-CL5-2021-D6-01-04: Cyber secure and resilient CCAM (CCAM Partnership)

Specific conditions	
Expected EU contribution per project	The EU estimates that an EU contribution of between EUR 5.00 and 6.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 12.00 million.
Type of Action	Research and Innovation Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Technology Readiness Level	Activities are expected to achieve TRL 5 by the end of the project – see General Annex B.

Develop cybersecurity building blocks which are ready-to-use in CCAM applications in vehicles and infrastructure, including communication protocols.

Connected and Autonomous Vehicles: Cyber Vulnerabilities Overview

HORIZON-CL5-2021-D6-01-05: Analysis of socio-economic and environmental impacts and assessment of societal, citizen and user aspects for needs based CCAM solutions (CCAM Partnership)

Specific conditions: Proposals can address either area A or area B	
Expected EU contribution per project	The EU estimates that an EU contribution of between EUR 3.00 and 4.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 8.00 million.
Type of Action	Research and Innovation Actions

Area A: Develop methods and indicators to assess the negative and positive impacts of CCAM systems and services (short, medium, long-term).

Area B: Develop tools that help CCAM developers and public authorities to implement inclusive mobility solutions that benefit people of all backgrounds.
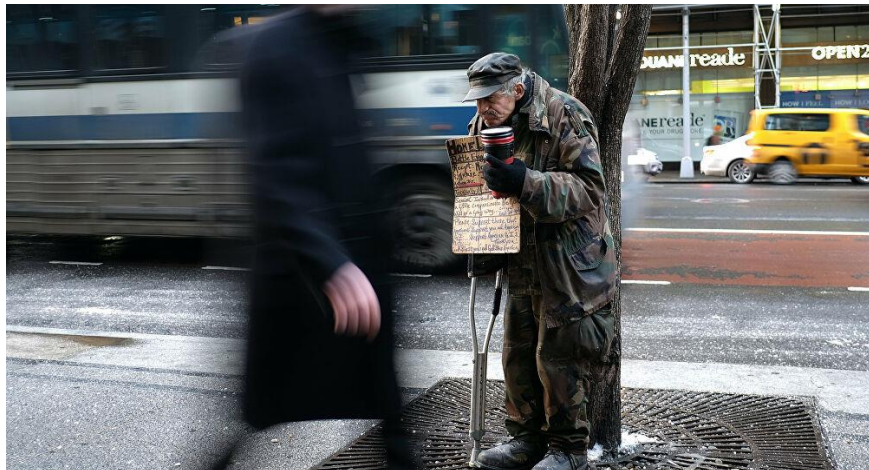
HORIZON-CL5-2021-D6-01-06: Framework for better coordination of large-scale demonstration pilots in Europe and EU-wide knowledge base (CCAM Partnership)

Specific conditions: Proposals must address area A and area B	
Expected EU contribution per project	The EU estimates that an EU contribution of between EUR 5.00 and 6.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 6.00 million.
Type of Action	Research and Innovation Actions

Area A: Establish a common framework for coordination of CCAM demonstrations in Europe, and a framework for exchange of test-data (from in-vehicle or infrastructure).

Area B: Extend the existing EU-wide Knowledge Base on CCAM and promote it in social media, conferences, and workshops.
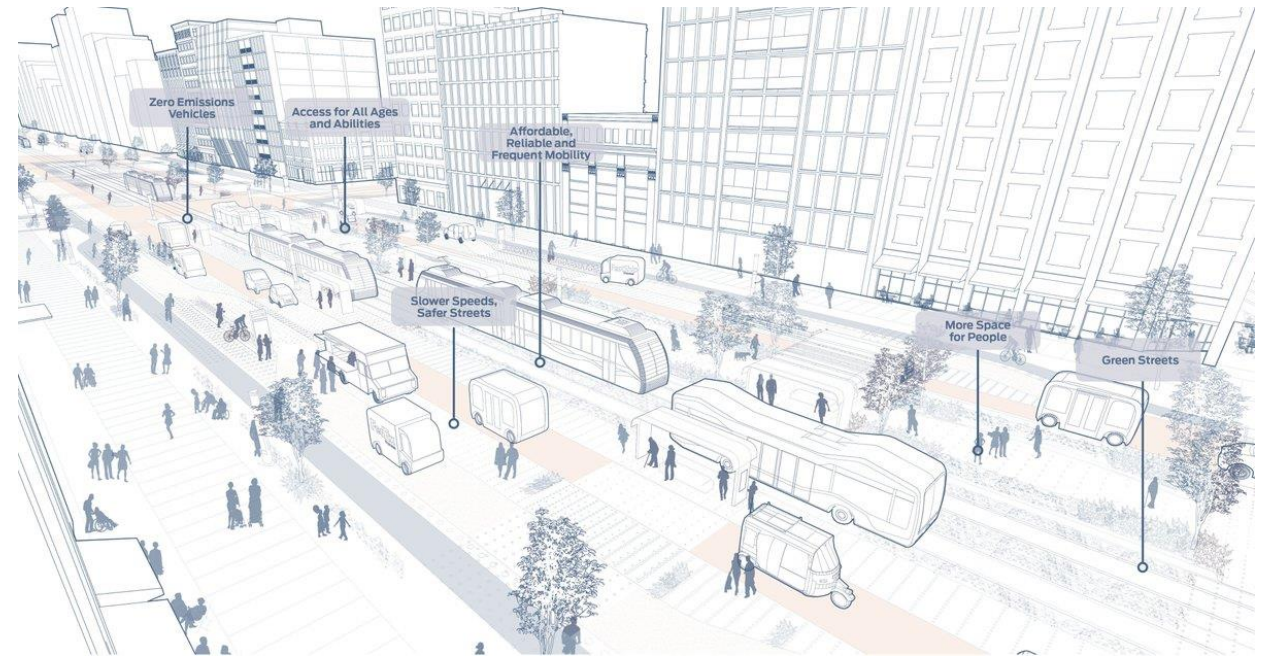
HORIZON-CL5-2022-D6-01-01: European demonstrators for integrated shared automated mobility solutions for people and goods (CCAM Partnership)

Create a large CCAM demonstrator on SAE Level 4 in real traffic, including MAAS and logistics. Include all aspects from the previous Horizon Europe CCAM calls.

Specific conditions	
Expected EU contribution per project	The EU estimates that an EU contribution of between EUR 20.00 and 25.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 50.00 million.
Type of Action	Innovation Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: The funding rate is up to 60% of the eligible costs. This funding rate applies both to members and non-members of the partnership, except for non-profit legal entities, where the funding rate is up to 100% of the total eligible costs.
Technology Readiness Level	Activities are expected to achieve TRL 7 by the end of the project – see General Annex B.

HORIZON-CL5-2022-D6-01-02: Reliable occupant protection technologies and HMI solutions to ensure the safety of highly automated vehicles (CCAM Partnership)

Specific conditions	
Expected EU contribution per project	The EU estimates that an EU contribution of between EUR 6.00 and 8.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 8.00 million.
Type of Action	Research and Innovation Actions
Technology Readiness Level	Activities are expected to achieve TRL 5 by the end of the project – see General Annex B.

- Develop protection systems for people sitting both faced forwards and backwards in the vehicle.
- Develop intuitive user interfaces for interaction with the driver, passengers and with other road users.
- Develop systems for checking that the driver is alert and ready to resume control of the vehicle.

HORIZON-CL5-2022-D6-01-03: Human behavioural model to assess the performance of CCAM solutions compared to human driven vehicles (CCAM Partnership)

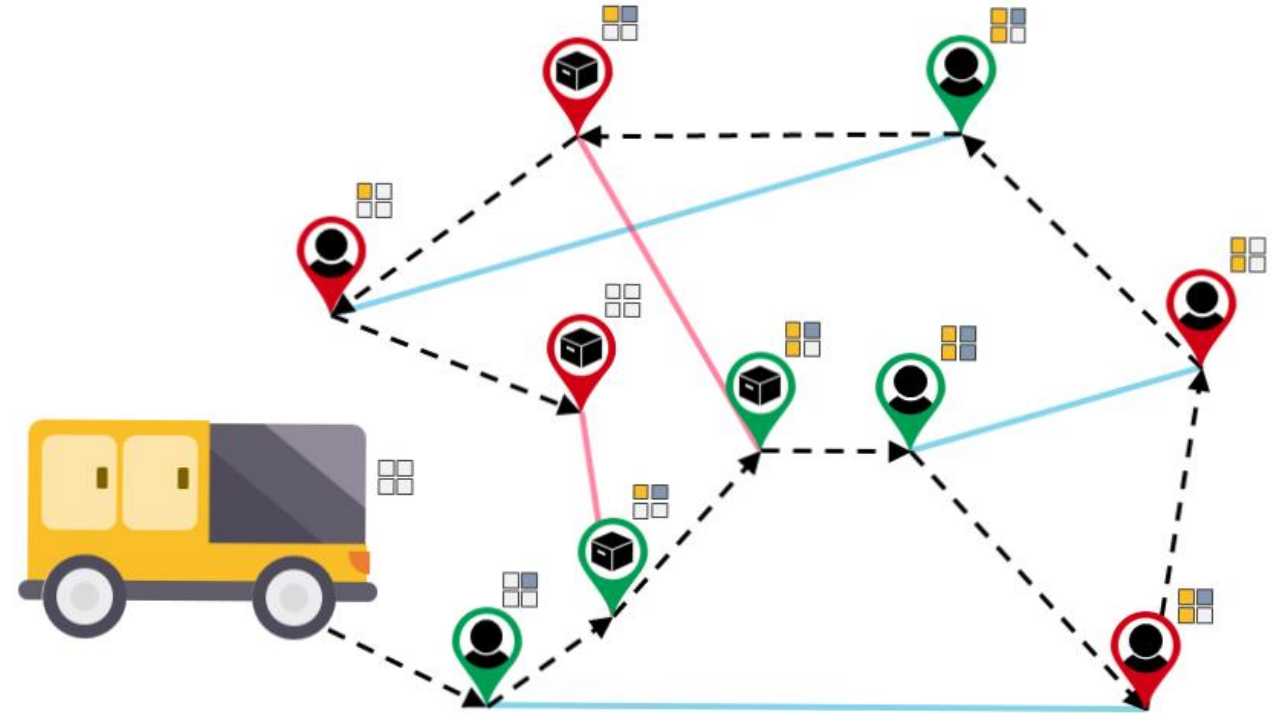| Specific conditions	
Expected EU contribution per project	The EU estimates that an EU contribution of between EUR 7.00 and 8.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 8.00 million.
Type of Action	Research and Innovation Actions
Technology Readiness Level	Activities are expected to achieve TRL 4 by the end of the project – see General Annex B.

Create realistic human drivers to be used in simulators. The models should be independent from proprietary software.

HORIZON-CL5-2022-D6-01-04: Integrate CCAM services in fleet and traffic management systems (CCAM Partnership)

Develop fleet and traffic management systems to integrate control of CCAM vehicles with the entire mobility system for transport of people and goods.

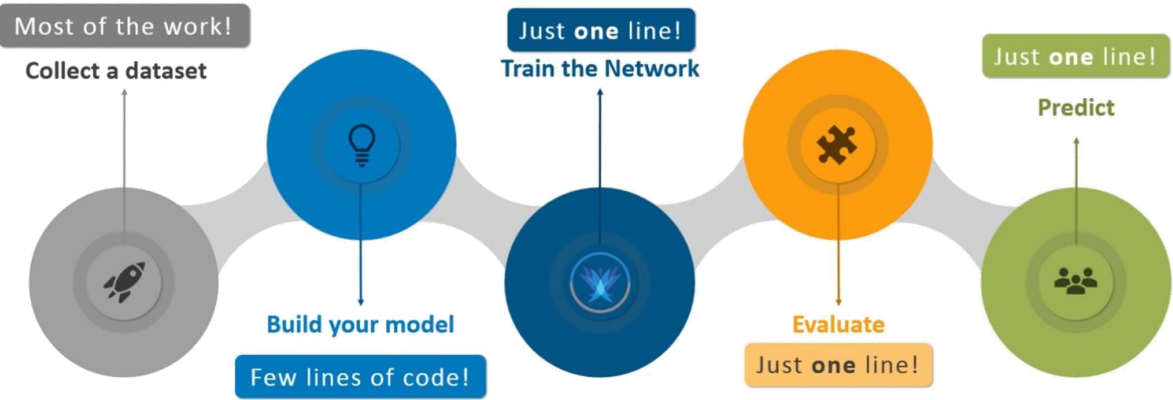| Specific conditions	
Expected EU contribution per project	The EU estimates that an EU contribution of between EUR 4.00 and 5.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 10.00 million.
Type of Action	Innovation Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: The funding rate is up to 60% of the eligible costs. This funding rate applies both to members and non-members of the partnership, except for non-profit legal entities, where the funding rate is up to 100% of the total eligible costs.
Technology Readiness Level	Activities are expected to achieve TRL 6-7 by the end of the project – see General Annex B.

HORIZON-CL5-2022-D6-01-05: Artificial Intelligence (AI): Explainable and trustworthy concepts, techniques and models for CCAM (CCAM Partnership)

Specific conditions	
Expected EU contribution per project	The EU estimates that an EU contribution of between EUR 5.00 and 6.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 12.00 million.
Type of Action	Research and Innovation Actions
Technology Readiness Level	Activities are expected to achieve TRL 5 by the end of the project – see General Annex B.

Support the development of AI in CCAM with explainable models using real and synthetic training data from all over Europe for various traffic conditions.

Develop AI

Most of the work!
Collect a dataset

Build your model
Few lines of code!

Just **one** line!
Train the Network

Evaluate
Just **one** line!

Just **one** line!
Predict

Use AI

Gather environment information from sensors

Filter, interpret & understand sensor data

Safely choose actions

Initiate actions

Sense   Perceive   Decide   Actuate