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ENSEMBLE

ENabling SafE Multi-Brand pLatooning for Europe

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Written By	Frank Daems ERTICO	03-03-2022
	Odile Arbeit-de-Calendar Uni. Gustave Eiffel	03-03-2022
Checked by	Milica Zizic, Ertico	27-03-2022
Approved by	Marika Hoedemaeker TNO	31-03-2022

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Revision history

Version	Date	Author	Summary of changes	Status
1.0	02/02/2022	ERTICO	Initial draft	Prepared
2.0	30/03/2022	ERTICO	Final draft	Prepared
3.0	31/03/2022	TNO	Coordinator review	Approved



1. EXECUTIVE SUMMARY

1.1. Context

Platooning technology has made significant advances in the last decade, but to achieve the next step towards deployment of truck platooning, an integral multi-brand approach is required. Aiming for Europe-wide deployment of platooning, ‘multi-brand’ solutions are paramount. It is the ambition of ENSEMBLE to realise pre-standards for interoperability between trucks, platoons and logistics solution providers, to speed up actual market pick-up of (sub)system development and implementation and to enable harmonisation of legal frameworks in the member states.

1.2. Project scope

The main goal of the ENSEMBLE project is to pave the way for the adoption of multi-brand truck platooning in Europe to improve fuel economy, traffic safety and throughput. This has been demonstrated by driving up to seven differently branded trucks in one (or more) platoon(s) under real world traffic conditions across national borders. During the years, the project goals were:

- Year 1: setting the specifications and developing a reference design with acceptance criteria
- Year 2 and 3: implementing this reference design on the OEM own trucks as well as perform impact assessments with several criteria
- Year 4: focus on testing the multi-brand platoons on test tracks and international public roads

The technical results will be evaluated against the initial requirements. Also, the impact on fuel consumption, drivers and other road users will be established. In the end, all activities within the project aim to accelerate the deployment of multi-brand truck platooning in Europe.

1.3. Abstract of this Deliverable

This deliverable gives an overview of the ETPC activities between 1/1/2020 and the closure of the project at 31/3/2022. It is the successor of deliverable D6_6 ETPC meeting records V1.

Although the COVID Pandemic limited a lot the operations and physical gathering of the ETPC, several interesting online sessions were held keeping the audience informed about the progress of ENSEMBLE and informing them about interesting Platooning related projects from other projects and regions.

The so far last ETPC event was in March 2021. Focus after the project will be to revive the ETPC by attempting the stakeholders still to sign up for an MOU like agreement.

2. INTRODUCTION

2.1. Background

The European Truck Platooning Challenge Network (ETPC) initiative was launched in early 2016 under the Dutch Presidency of the EU. A large demo was organised in some EU Member States with cross-border trips of six mono-brand platoons converging to Rotterdam in the Netherlands (ETPC, 2016). The ETPC network opened a long-term vision for the management of heavy goods vehicles on major European corridors. It offers a unique opportunity for manufacturers and OEMs to develop autonomous and intelligent heavy vehicles, and for infrastructure managers to experiment the concept on a large scale, to formulate conditions for its safe and acceptable implementation, particularly for other users and transport companies, and to assess potential benefits. The ETPC promotes cooperation between manufacturers and road authorities. The challenge offers a platform for all partners, industrials, OEMs, logisticians, research institutes and public authorities to strengthen their mutual efforts. The objective is now to allow platoons made up of vehicles of different brands to circulate safely in the EU. An Amsterdam Declaration was signed by the EU Transport Ministers to join their efforts developing autonomous and connected vehicles. A high-level group is continuing this work in cooperation with the ETPC.

2.2. Aim

This deliverable just gives an overview of the activities done between 1/1/2020 and 31/3/2022

2.3. Structure of this report

Every chapter is a short report or just an agenda of the meeting or activity that took place in the above-mentioned period.



3. ETPC GA DD 19-1-2021

The presentations are available upon demand. We report the minutes:

EUROPEAN TRUCK PLATOONING CHALLENGE GENERAL ASSEMBLY – JANUARY 19TH 2021

Agenda

Tuesday 19 January 2021, 2021 – h14:00-16:00

Venue: on line

Time	Topic	Presenter
14:30 14:45	Welcome and adoption of agenda	Frank Daems, ERT
14:45 15:00	Review of the work plan 2020 – reporting: <ul style="list-style-type: none"> • Task forces • Management assignments for 2020 	Frank Daems, ERT
15:00 15:15	Work plan and management assignment for 2021: <ul style="list-style-type: none"> • Task assignment • Confirmation of ETPC management 	Discussion
15:15 15:45	MOU/Business covenant - signature event in Hamburg <ul style="list-style-type: none"> • MOU process in four step, as described in ENSEMBLE • Agreement on signature process (in person or recorded) 	Frank Daems, ERT Odile Arbeit de Chalendar, Univ. G. Eiffel
15:45 16:00	Break	
16:00 16:15	Membership overview	Frank Daems, ERT
16:15 16:45	New Website: <ul style="list-style-type: none"> • Overview of the current situation • Content 	Carmela Canonico, ERT
16:45 17:15	AOB from the members and additional discussion: <ul style="list-style-type: none"> • Members are invited to suggest topics, actions, projects, additional priorities for the platform • Suggestions for the next ETPC networking meetings 	Discussion
17:15 17:30	Closing remarks	

On line Participants

Name	Family name	Organisation
Odile	Arbeit de Chalendar	Univ. G. Eiffel
Kim	Van Driel	EREG
Steve	Phillips	CEDR
Edoardo	Mascalchi	CLEPA
Jocelyn	Delatre	ACEA
Ryad	Joondan	GEIE-TMB
Carmela	Canonico	ERTICO
Frank	Daems	ERTICO
Jana	Habjan	ERTICO

Not represented:

- IRU
- ESC

Welcome

Overview of the agenda, round of table and AOB.

The agenda was unanimously approved

Recap Mission of ETPC

The ETPC Mission (see presentation) was discussed and unanimously read and agreed

Work plan 2020 review

Overview on the WP 2020 was presented

The review is documented in the ppt shared

No specific comments.

EReg will report back on the role they can play in the exemption processes (Collecting your inputs & suggestions on regulation topics to address to European Commission.

ETPC taskforce deliverables are actually generated by ENSEMBLE partners, lacking the view of the stakeholder community. It is now the question to ENSEMBLE if the ETPC stakeholders can get access to those deliverables, before the ending of the project (when all public deliverables are open anyway).

It seems logical that ETPC reviewers have access and contribute (maybe in separate ETPC labeled documents) as they have signed each their support to the project.

ETPC wants to review this and formulate their view on these deliverables. The management team will organize dedicated ETPC event(s) for these, also open to ENSEMBLE representatives.



Management 2021 assignments

Agreed as per the slides presented and provided

Workplan 2021

Agreed as per slides provided

A particular topic is the 'after ENSEMBLE project' situation of ETPC, as funding will fall back drastically. The GA did not immediately formulated a clear vision n this topic. The interest to be informed about projects and the 'informative character' of the ETPC is an interest.

In 2021 we will also address the MOU (business covenant) The process and the intention to contribute was expressed by all attendants. Essential in this process is to involve again IRU and ESC

Membership

Accepted as per the slides supplied

New ETPC website

Accepted as per the slides

Attention points :

RYAD: Logo Mont Blanc tunnel –follow the results of platooning –Mont BLANC TUNNEL.

Small article

Archive –only for people that see the ppts

Final event—press 300 articles... TV

Explain ETPC, event the concept –communicate on the vision and perspective of platooning , event

Carmela provides the tabs proposal

- Home: intro to ETPC and its objectives, ETPC VISION 2022
- Archive : Historical pictures from the 2016 event –ask consent... or their own platoons. Odile will provide short historical background
- News/events
- Related projects (like Mont blanc tunnel)—Available for paying members
- ETPC events ppt: (Only for paying members)

AOB

Frank asked a short feedback about the meeting experience: All attendants liked it and were enthusiastic, but a physical event is in favor.

Actions

Item	Who	Time	Remark
Identify role of EREG in exemption process	Kim	ASAP	
Initiate Collecting inputs fore regulation options	ETPC mgt	Q1 2021	

Discuss with coordinator the release of ENSEMBLE docs related to ETPC taskforces	Frank	ASAP	Ingoing, expecting answers
Disseminate those deliverables to the ETPC GA members/ Collect ETPC views	ETPC mgt	After agreement from ENSEMBLE coordinator	
Organise a specific meeting with EReg mgt	ETPC mgt	ASAP	
Seek presence of IRU and ESC in the busines covenant process and in the ETPC platform	ETPC mgt Odile makes first contact	ASAP	
Provide first glance of ETPC website Tabs	Carmela	Early February 2021	The actual link is http://ertico.partnerwise.be



4. ETPC NETWORK MEETING DD 17-03-2020

This was the last physical meeting before the COVID pandemic. We report the minutes of the meeting.

EUROPEAN TRUCK PLATOONING CHALLENGE NETWORK WORKSHOP – 17TH MARCH 2020

Tuesday, 17th March 2020 – h15.00-16:00

Venue: conference call

Agenda

It is a call dealing with the ENSEMBLE final event May 2021

Introduction – Assignment – Feedback – Conclusions

Participants

Name	Family name	Organisation
Steve	Phillips	CEDR
Carmela	Canonico	ERTICO
Frank	Daems	ERTICO
Iuliia	Skorykova	ERTICO
Odile	Arbeit de Chalendar	IFSTTAR
Kristof	Rombaut	MOW
Marika	Hoedemaeker	TNO
Bas	Gerrits	TNO

Part 1 – Introduction presentation

Frank Daems and Marika Hoedemaeker made an introduction, explaining the Ensemble Platoon support function and the context of the final event . (Presentation available)

Part 2 – Open discussion on the needed exemptions

- What exemptions are needed?
- What is the envisioned time line and process to get those exemptions?
- What other support is needed from the road authorities?

- Police guidance, traffic management, safety precautions, support to press, drones for movie capturing, etc.

Kristof Rombaut gave very valid information that was discussed amongst the other attendees. This information is gathered in a first overall project structure and related action list (see addendum).

Major attention points (For actions, see further)

- No announcement to other road users. Otherwise, they try to cut in to test.
- Support from press is needed to avoid fake news. (e.g.: driverless truck hit Flanders) and to avoid frightening people (e.g.: there are no drivers inside the trucks).
- Preparation of final events estimate duration: Process 4 to 6 months raising confidence and political implication.
- Compliance should be with the *'prototype directive'*.
- Attention for testing; especially the EMC test.
- The driver in the end is responsible, like in ACC.
- ENSEMBLE Support function is demonstrated: coordinating braking/acceleration, distance keeping, communication with the infrastructure, automated adaptation to cut in and cut out movements of other road users, and of course the MULTIBRAND (7 trucks), Cross boarder (NI-Belgium) and ad hoc (Trucks meet them each other while driving) truck platooning.
- A ministerial decision to give exemptions on following distance is needed to be obtained. A good description of the route is needed, with the indication of the infrastructure (tunnels, bridges, etc.).
- The local police will have to coordinate with federal/central police, so everybody knows that there is a test going on.
- In terms of traffic management, we need to discuss what we want to do, like best traffic conditions monitoring, possible rehearsals to avoid glitches during the final event, deciding if alert the other users or not (to avoid fake news and change of behaviour).
- EU expansion and relation: Exemptions are typically done by different agencies, rather than the road authorities. Is more the field of EREG.

Part 3: Open discussion: Show case elements and stories (other than live demo)

This will be moved to a follow up telco

Part 4: Open discussion: Live demo scenario

This will be moved to a follow up telco

5. ETPC MEETING DD 28-05-2020

ENSEMBLE – EC meeting- Minutes

DATE 28 May 2020, on line meeting

Agenda

1. Project update
2. ETPC vision 2020 and dynamic exemption
3. EC policy perspectives
4. Discussion and questions

Objectives

- Recall and inform on the Ensemble project
- Discuss the vision of truckplatooning for 2022
- Future evolution and possible implementation, the aim is to understand EC foreseen objectives and regulation changes (e.g. level of automation to be allowed)

Participants

European Commission

- Tom Alkim, DG Research
- Antony Lagrange DG Research
- Ludger Rogge DG Research
- Georgios Sarros Ensemble PO INEA
- Geert van der Linden DG Move
- Guus van Schouwen DG Move
- Torsten Klimke DG Move invited

Ensemble project team

- Marika Hoedemaeker project coordinator TNO
- Odile Arbeit de Chalendar ETPC management board Task leader ETPC Université Gustave Eiffel

Marika Hoedemaeker reported the project status of ENSEMBLE (per date)

Presentation available upon demand

Frank Daems lined out the relationship between the ENSEMBLE project and ETPC

An insight was also given on ETPC VISION 2022 and dynamic exemptions concept.

Presentations available upon demand

A discussion on policy update was organized:

Discussion and questions during the meeting:

-Odile: How is ENSEMBLE related to EC agenda, in terms of regulation, policy, working groups, topics?

-Antony:

A general safety regulation has been adopted in 2019/2144 including CCAM, automation, cyber and platooning communication (V2V). One single V2V standard is now adopted throughout Ensemble.

Regulations regarding platooning refer to the common protocol between manufacturers. Based on this, some regulations will be developed, specifically for commercial vehicles.

But at that stage, there is no mandatory date to approve the rules. Platooning will not be mandatory, but it should use the V2V communication. Trucks are not the focus of vehicle regulations. Therefore the Truck community should be more vocal/more lobbying (such as ACEA)

But there is a favorable momentum now to work on the traffic rules aspect of platooning (with German presidency).

-When can results from Ensemble be expected?

The results from Ensemble are expected by the end of next year. Intermediate results and lessons learned are already available.

- Ludger: Will the autonomous function be tested in the Ensemble project?

No, only the support function will be demonstrated.

Ludger advises that in CCAM WG4 on road safety, ENSEMBLE should get involved. And Lessons learned from Ensemble should be shared with this platform. Experiences on problems with exemptions for platooning could also be discussed as well as Dynamic exemption that has currently been presented (see slides). More harmonization is needed between the EU countries.

-Geert: What are the specific elements on the roads to grant access? What infrastructure elements are essential for platooning?

ENSEMBLE platooning is designed for minimally 2-lane highways (so no single lane roads).(In line with ETPC Vision 2022)

Specific infrastructure elements can be handled, but in which way is up to the road authorities. In principle, ENSEMBLE platooning is flexible to “listen to” messages from the infrastructure. In case platoons are only allowed with a certain speed or distance, the platoon will adjust this. In case a platoon is not allowed at all, it can be dissolved. In ENSEMBLE, the specific effects of axle loads of platoons on pavements and bridges is studied.

-Geert : What part of the road network do you expect to be candidate for platooning?

All highways with 2 or more lanes.

Geert suggests to get involved in the CCAP Platform.

-Geert: On what basis works the V2I communication ? Is there an API concerning road allowance, warnings

Not all communication levels (OSI levels) have been defined for the V2I. ENSEMBLE defines and implements the V2I G5 interface up to OSI level 5. It assumes the information is at least presented via the display (HMI) to the driver. No work has been done on the particular presentation and application layer.

VISION 2022 of the ETPC mentions the necessity of such an interface. It also requires that the platoon will communicate the confirmation to the road authority if it follows the instant V2I recommendations or obligations, published by the authorities.

Neither have any tools nor methods been defined to allow the authority to use this V2I interface.

It might be the case that for the final event a minimum prototype and demonstration is necessary. (tbd)

We will put this on the ETPC agenda and align with CEDR.

-Tom: is there really a demand from the logistic sector for platooning? ROI

A ROI study has been led by both IRU and ESC as part of the ETPC, showing that the fuel saving benefit is not the main driver for the logistic sector.

The business aspects are studied in WP4 of the ENSEMBLE project. As the main benefit of the ENSEMBLE platoon support function is improving SAFETY and drivers' assistance, we are actually investigating what business impacts they can generate. (e.g. based upon insurance benefits for trucks, drivers and cargo , increasing the SAFETY image building for holders and transporters, ..., etc.). As these are recent insights , so far the insurance aspect have not been sufficiently explored, but will be addressed in the next months.

Business cases have been developed for specific platooning services , like the TULIP project in the Netherlands, DHL in Germany, border crossing (Turkey with EC) and for Tunnel traffic management (Mont Blanc tunnel) . Some food companies would like to green their image by using truck platooning.

The Starlog project is intending to test real-life corridors on which the transport sector will be partner.

-Geert: How are overtaking manoeuvres coordinated (e.g last truck goes first..)?


Coordinated overtaking is part of the autonomous function (not the support function). The specifications of the autonomous function are still under discussion. Therefore it is unknown for now how the overtaking manoeuvres will look like.

Actions points for Ensemble:

1. A contact with DG CLIMAT could take place (Alex Pacaud)
2. CCAM WG4 on road safety, ENSEMBLE should get involved. And Lessons learned from


Ensemble should be shared with this platform

3. Truck community should be more vocal/more lobbying (such as ACEA)
4. Favorable momentum now to work on the traffic rules aspect of platooning (with German presidency).



Platoon strategic level: Roadblocks and mitigation

<p>Who is going to do it? Independent companies? Candidates?</p>	<p>Commercial opportunities are necessary</p> <ul style="list-style-type: none"> Fuel reduction-CO2 SAFETY Logistic benefits- route planning ...road considerations Drivers' benefits 	<p>road operators might decide that they need it</p>
<p>Consider L1 and L4 as the business cases changes.</p>	<p>What is the Open playing field? There is a need for an independent (Multibrand-multifleet)</p> <p>Closed environment? Strategic level is under own initiative</p>	<p>EU regulations changes/diversifications --have to be considered when organising for commercialising</p>
		<p>Driver (even in the first truck) is responsible to know.</p>



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6. Q3 & Q4 2021 PERIOD

Due to the organization of the public live event, the severe COVID pandemic rules that prevent physical attendance and networking, and the starting preparations for the final event, the ETPC events were frequently canceled and rescheduled.

The ETPC actions focused on the preparation of the MOU (memo of understanding) -are reported in deliverable D6_8.

7. SUMMARY AND CONCLUSION

Although the COVID Pandemic limited a lot the operations and physical gathering of the ETPC, several interesting online sessions were held keeping the audience informed about the progress of ENSEMBLE and informing them about interesting Platooning related projects from other projects and regions.

In Q3 and Q4 a lot of project attention was focused on the public live demo event in Barcelona September 2021, and the starting preparations for the final event. As well as the actions to guarantee the continuation of ETPC operations after the finalization of the ENSEMBLE project, such as the MOU signature process.

The so far last ETPC event was in March 2021. Focus after the project will be to revive the ETPC by attempting the stakeholders still to sign up for an MOU like agreement.

