ITS Evaluation Workshop / Seminar

5 - 6 February 2020

ASFA, 3, Rue Edmond Valentin, 75007 Paris, France

Report on Proceedings

ITS Evaluation Workshop / Seminar

Date: 5 - 6 February 2020
Location: ASFA, 3, Rue Edmond Valentin, 75007 Paris, France
Language: English
Participants: 25 participants from 9 EU countries. For the full participant list, please see annex 1.
Host: Cross Corridor Cooperation (EU EIP A2) / Arc Atlantique 3 Evaluation Workshop.

Background and objectives

The ITS Corridor Evaluation Workshop was organised by EU EIP A2 Monitoring and Dissemination, the Arc Atlantique and EU EIP Activity 5 – Evaluation. Its purpose was to educate delegates and help with the process of continually refining our approach to ITS Corridor evaluation. It came at an opportune time as the ITS corridors are entering the latter stages of their deployment programmes. Furthermore, we are recently learning more of the need for our community to communicate our successes and benefits more widely and in a meaningful way to various stakeholders in our work. It is also quite an important time with regards to looking ahead and planning for the next phase of the programme.

Workshop - Day 1, 5th February 2020

Opening and welcome

The workshop started with a welcome and some basic information by the host and the organisers:

- Opening and welcome by Paul Wadsworth, Arc Atlantique Corridor (Capita);
- Opening and welcome by Tobias Reiff EU EIP A2 (BASt);
- Opening and welcome by Malika Seddi on behalf of ASFA.

Scene setting: objectives and success of the 2-day workshop

Speaker(s): Paul Wadsworth, Arc Atlantique Corridor (Capita);

Objective(s): Setting the objectives and success criteria for the 2-day collaboration workshop.

Paul introduced the goals of the event:

- Facilitate cross corridor discussions concerning the evaluation process amongst the operational level of the ITS corridors;
- Assist EU EIP A5 Evaluation Activity in disseminating evaluation methodologies and best practice;
- Embed the importance and benefits of evaluating ITS corridors and the need for a harmonised approach;
- Inform and educate participants in the workshop/seminar through broadening the horizons.

Paul also emphasized the importance to use the workshop as an opportunity to look ahead and understand together what can be done - and should be done – to prepare for the future and create a case for the next phase of the programme.

Paul also stated the desired outcomes as follows:

- Identifying potential process improvement;
- Identifying potential new KPIs;
- Achieving a further cross-corridor co-operation;
- Learning something new – knowledge sharing;
- Inspiring each other and enjoying collaboration.

Speaker(s): Tobias Reiff EU EIP A2 (BASt);

Objective(s): Introduction.

As part of the introduction, Tobias shared his view on the importance of using the collaboration workshop as an opportunity to:

- Communicate our successes;
- Educate participants;
- Foster a harmonized evaluation process.

Tobias also raised the importance of:

- Understanding how we can contribute to the host topics of the EU COM Green Deal;
- Explaining the background of the evaluation process to the people who bring the input;
- Seeing where our methods are strong and where they could be improved.

Finally, Tobias gave a reminder of the following collaboration opportunities, such as:

- Abnormal Transport & Future Traffic WS, 2020 April 1-2, Berlin, Germany;
- 2nd WS on Roadworks Information, 2020 April 22, München, Germany.

Post-meeting note: These two workshops have been postponed due to the Corona pandemic. The new dates will be announced at a later time.

Session 1 The benefits of a harmonised approach to corridor evaluation

Speaker(s): Merja Penttinen, EU EIP A5, NEXT-ITS, VTT;

Objective(s): Present the importance that all the entities involved in deploying ITS can speak the same technical language and report in a common way.

Merja started the conversation with an important question: why do we evaluate? She emphasized the importance of starting from clarifying the purpose underpinning the evaluation process as a way to set the scene and therefore understand what might be demonstrated by the evaluation process.

The question driving the evaluation process might be different, depending on the purpose to be achieved, such as:

- What benefits EU/your government is getting for the money?
- How to reduce CO2, fatalities etc.?
- How much can we reduce serious injuries by adopting particular measures?
- Which of these options should we deploy to have maximal impact on CO2 reduction?
- Which of these options should we select with a limited budget?

She then focussed on what impact areas might underpin the evaluation process, depending on the objective of the evaluation, such as:

- Safety;
- Efficiency;
- Environment;
- Mobility;
- Equity;
- Land use;
- Others.

This will inform which data will be needed and how different impact areas are measured and are translated in monetisation.

The following set of data was mentioned as the starting point to be able to provide the basis needed to conduct the impact evaluation.

Project description:	Network statistics
- What - Where - When	- Length of the network - Vehicle km driven - Vehicle hours driven - Vehicle hours lost - Safety (e.g. fatalities, avg.)

The key point raised during this session was related to the importance of having a common agreement on the data needed and how it can be used. The importance of cooperation to better utilise and share existing knowledge and have a common view on potential benefits was also discussed as a crucial enabler of success.

The need to understand how to deal with some country-specific parameters (e.g. cost of fatalities is different across the countries involved in the programme) was discussed. However, whilst some of these country-related parameters cannot be harmonised, and different methodologies and tools are currently used to evaluate ITS solutions in different scenarios, environments and countries, there was a general agreement that a common approach to evaluation might be appropriate and might enable a more structured and comparable evaluation process. This would provide:

- Common ways and tools for calculating the benefits;
- Possibility to compare and cross check ITS solutions tested across corridors;
- Magnitude of the benefits in comparable roads/traffic;
- Cross-corridor analysis possible;
- Transparency of CBAs;
- Support for decision making for ITS investments.

Session 2 - Evaluation measurements – The EU/ EUEIP KPIs

Speaker(s): Federico Marsili, Capita;

Objective(s): Present the methodology that has been followed to design the current KPI measurements (EU EIP Activity 5 ITS KPI Indicators).

Federico shared the approach used to develop the EU EIP KPIs Technical Note, as the intent to have a "practical document" developed through consensus. The KPI Taskforce recognised that monitoring of 'Before and After ITS implementation' conditions can present some difficulties at times. In this instance, local considerations for the selection of projects will apply. He also explained how the definition of the KPIs informs the structure of the future Evaluation Reports as well as other A5 work packages relating to ITS Directive Priority Action Evaluation Plan and the development of the Evaluation Toolkit, which will be aligned to the KPI Definitions where applicable.

Federico also clarified that the document does not want to preclude the use of National standards/methodologies but rather promotes the principles of 'Recording and Explaining' Key Departures from the suggested guidelines. This approach can be used to develop a 'knowledge database' (Values of Time, Value of Emissions, Value of a Life, Societal Discount rates, etc).

The following points were covered during the session:
- Outline of the process used to design the ITS KPIs as part of EU EIP Activity 5;
- ITS KPI definitions (contributors, data sources, key objectives and outcomes);
- Categorisation of KPIs;
- EU EIP Deployment KPIs;
- EU EIP Benefit KPIs;
- Comparison between DG MOVE and EU-EIP KPIs.

Federico discussed about the objectives underpinning the development of the ITS KPIs framework:

- Developing a definitive list of practical and universally applicable (consistent) Deployment and Benefit KPIs for Ex-Post Evaluation of implementation of road-based ITS Services;
- Consolidating the existing body of work on ITS Services' KPIs into a single reference document;
- Presenting the KPIs by means of a single convenient reference document for evaluators (ITS Deployment and Benefit KPI Definitions – Technical Reference, 8 February 2017);
- Providing guidance on how to measure KPIs (spatial/time coverage and benefits' monetisation for Cost Benefit Analysis purposes).

Federico explained how KPIs have been categorised taking into account the main ITS Priority Areas or Benefit categories (EU 2015 ITS KPIs report). Benefit KPIs have been developed with the intention to facilitate the undertaking of consistent Cost Benefit Analyses (CBAs) across all Corridors, in line with relevant CBA guidance developed as part of the EU EIP+ project.

The following considerations were also raised:

- The KPI taskforce recognises that, with time, additional KPIs may be added and existing KPIs modified (or even dropped), as technology evolves;

- Need to apply what Capita (Federico) presented across projects by reviewing CO2 methodology calculation, and how it can be applied in projects;
- Basic document that provides guideline about how to undertake the evaluation of CO2 reduction in order to have a starting point for everybody;
- Importance of gathering the right data with the right quality;
- A challenge is that there isn't a single source of the truth – but literature should exist that explains why there are different evaluation models in different countries.

Session 3 - Assessment method for transport policy measures,

Speaker(s): Henk Taale – Rijkswaterstaat, Jan Kiel – Panteia;

Objective(s): Sharing the methodology that was developed to deal with different type of measures, and how an integral assessment is possible for different type of measures, stakeholders, etc.

At the beginning of this session, Henk acknowledged that the assessment of packages of transport measures in regions is hampered by different aspects and, also, that different tools and methods are available, some general, some tailor made. Different stakeholders have different wish lists:

- Governments, local and regional;
- Transport companies;
- Industry;
- Citizens (via interest groups).

Limited budgets mean that this wish list is usually larger than available budgets can provide.

He also raised the need for different transport policy measures to be assessed, differences both in size and content and the fact that often it's not clear what the impacts are.

Different types of measures are normally undertaken:

- Infrastructural;
- Traffic management and ITS;
- Demand management.

Also, Henk raised the following points with regards to freight transport and public transport:

- Use and development of infrastructure;
- Different policy goals: accessibility, safety, environment;
- Different costs of the measures (small – large);
- Different budgets available.

Essence of the method Henk presented can be defined as follows:

- Approach for different problems at different geographical levels;
- Integration of different types of impacts:
    - o Monetised;
    - o Quantified, but not monetised;
    - o Qualitative aspects.
- Assess different packages with different types of measures;

- Integral assessment of different policy goals:
    - o Accessibility;
    - o Sustainability;
    - o Safety;
    - o And Quality (could also be a policy goal!).

All this leads to the question: How to make 'optimal' packages which take into account the stakeholder perspectives? Henk described how the tool they have developed helps to assess different considerations and how different stakeholders need to be taken into account, including how you can measure things within the budget available. A practical exercise was also undertaken with groups of 3 people, each acting as the representative of a key stakeholder group. The session served to demonstrate the relevance of this method and how it can be practically used.

Session 4 – SWOT of the current arrangements for evaluation at a cross corridor level

Speaker(s): Daniel Cullern EU EIP A5 (Capita);

Objective(s): Is the current process of a separate EUEIP and ITS corridors 'agreeing' to share data working? What are the Strengths, Weaknesses, Opportunities and Threats?

The current A5 arrangements supporting inter-corridor exchange and consolidation were mentioned, such as:

- WP1: Evaluation Plan for ITS Directive Priority Action Services;
- WP2: KPI Definition;
- WP3: Guidance and Reference;
- WP4: ITS Evaluation Toolkit;
- WP5: Evaluating Reporting;

The aim of this session was to have a retrospective review of the current arrangements across separate ITS corridors for the purpose of:

- Understanding whether the current process of separate ITS corridors agreeing to share data is working;
- understanding how it is working and what can be improved.

A SWOT analysis was undertaken by 4 separate groups to discuss:

- Strengths;
- Weaknesses;
- Opportunities;
- Threats;

To include conclusions of this session – an extract of the points raised during the SWOT session is available below:

Strengths:

- Good cooperation and constructive conversations;

- Harmonised approaches;
- Project extension;
- Flexibility evaluation;
- Evidence based support for decision making;
- Collective expertise -> exchange of experiences, results and methodologies;
- Bottom up;
- EU EIP umbrella.

Weaknesses:

- Different corridors approaching things in a slightly different way, making this difficult to compare and making the process not very efficient;
- Unexpected schedules;
- Communication and dissemination;
- Quality of individual evaluation reports;
- Lack of consistency;
- Lack of leadership;
- Lack of the new ex-post studies;
- How to select a good project risk vs ROI.

Threats:

- Corridors having different ambitions and budget;
- Resources;
- Policy cycle;
- Data ownership;
- No answers to EU COM;
- Not following the technical development (C-ITS, AD).

Opportunities:

- Use the learning to date to harmonise processes;
- Policy strategies, long term;
- Climate action;
- Performance KPIs important in CEF 2;
- Time to improve;
- Adopt/ support policy;
- Better linkage A5 and corridors.

Session 5 – Approaches taken by each of the corridor projects

Speaker(s): Evaluation Leads from each ITS Corridor;

Objective(s): Understanding what the current landscape is, through a summary of the approaches being adopted by each of the corridors at present.

Arc Atlantique 3:

- Deployment of real time traffic and travel information, traffic management services and safety related traffic information to:
    - Improve interoperability on 300km of network;
    - Enhance harmonised services on 11,000km of network;
    - Improve operational and cost efficiency on 10,000km of network.

- 15 implementations will be ex post evaluated to establish impacts and benefits.
- Significant benefits in terms of congestion reduction / bottlenecks, reduced emissions and improved safety are anticipated;
- Projects have been aligned to services in line with the EU EIP KPI definitions;
- Benefits related to congestion, safety and environment – using data from similar schemes.

Crocodile corridor:

- 2,500 km of corridor motorway equipped with technology allowing data collection (CCTV, road weather stations and sensors);
- 10 additional truck parking areas equipped with necessary technology (e.g. CCTV) for proper integration into the dynamic ITP information system with regards to availability and safety;
- Centralised modernisation of at least 7 national or regional traffic control centres for managing future challenges in terms of providing high-quality safety and security-relevant mobility data;
- 3 new or updated services including information from neighbouring countries and relevant cross-border traffic information;
- It includes four TEN-T corridors: Baltic-Adriatic, Rhine-Danube, Orient/East-Med (Mediterranean);
- EU EIP Evaluation Template will be used;
- Different countries involved are delivering different scope, therefore it's difficult to harmonise approach;
- Evaluation of traffic control management system has been presented;
- The implementation of National Access Points and enhancement of DATEX II exchange are priorities within the Crocodile corridor.

MedTIS 3:

- Travel time interoperability and continuity are now operational at France/Spain border and Italy/France border. 4600 km Traffic Management services deployed and enhanced;
- 1600 km of supporting TIS deployed or enhanced along the corridor;
- Enhanced road data collection and monitoring;
- Upgrade of Traffic Control Centres and enhanced alert services;
- Highlight: Avoiding congestion in tunnels by reducing congestion at toll barriers downstream (France):
  - Rearrangement of toll lanes with multilingual facilities and improved signalling:
    - Congestion impact indicators using lost hours saved by road users;
    - Traffic congestion reduction generates an estimated: 470 000€ economic gain, 127 tons reduction in CO_2 emissions.
- Evaluated safety, efficiency and environment;
- 3 levels of evaluation are in place - full ex-post evaluation, basic "minima" evaluation (based on safety related data) and extrapolated / simulated results;
- MedTIS uses the common EU EIP evaluation methodology.

Next ITS 3:

- Based on 7 specific measures incorporating various services, including Safety Related Travel Info, TIS and Traffic Management Plans;
- About 490 000 vehicle hours are saved, and circa 135 000 vehicle hours less spent in congestion annually;
- About three severe accidents are avoided;
- 11 thousand tonnes of CO2 emissions are avoided annually;
- The total value of the annual benefits in 2017 will be circa 15 Million €;
- Implementation costs are of circa 33 million € including VAT and thereby comparable to the benefits (the costs without VAT amount to almost 27 Million €);
- As the annual operation and maintenance costs will be in the order of 3 Million €, the NEXT-ITS 2 can be assessed to be socio-economically profitable;
- During this session the methodology was shared but no results are available as yet.

URSA MAJOR:

- Avoiding rush hour (Rotterdam) - 5,000 participants:
    - Average reduction of 51% of their rush hour car trips;
    - Improved traffic flow - average 51,500 less kilometres driven and 800 VHL saved;
    - Estimated saving of 367 tons of CO2, 624 kg of NOx and 35 kg of PM10;
- Traffic monitoring and control on A24/A25 – Strada dei Parchi S.p.A.
    - A24 Motorway: travel time reduced by approx. 2.5% on each carriageway. Traffic volume increase of vehicles 4.6% and HGVs 6.8%;
    - A25 Motorway: travel times reduced by 3.5% (West) / 4.9% (East). Traffic volume increase of vehicles (1.5%) and HGVs (2.3%);
    - Critical Events alert system in tunnels: response time from 5 mins+ to 10-20 seconds.
- National traffic management plans (TMP) in Switzerland
    - 390,000 vehicles rerouted;
    - 777,000 hour reduction of lost traffic time due to traffic jams or road closure;
    - This equates to 3,650 reduction of CO_2 per year.
- Separated the evaluation by ITS service and impact area.

The following considerations were raised during this session:

- The Ex-post and ex-ante approaches are common across multiple corridors;
- There is a need to harmonise the evaluation – a review of results would inform whether similar interventions are giving comparable results;
- Different projects are using a different literature review so assumptions are different – they should be agreed across the board and common;
- The measure of social value (soft measure) at qualitative level should be included;
- A5 to discuss about the criteria and the effect in terms of percentage – think about what to add in the agenda;
- It would be useful to use a similar colour-coding across corridors;
- Lesson learned: when mapping impacts, use the same colour coding across corridor for consistency;
- There is a need to do more benchmarking.

Workshop - Day 2, 6th February 2020

Session 1 – Approaches for evaluating C-ITS projects.,
Speaker(s): Luca Studer (Polytechnic of Milan)
Objective(s): To consider the process adopted by C-Roads and C-ITS projects for evaluating C-ITS Pilot Projects.

Luca started this session by sharing the overarching objectives of C-Roads WG3 with regards to the approach to impact evaluation, such as:

- to create the common approach for evaluating and assessing the C-ITS impacts within C-Roads Pilots and Field Tests;
- to coordinate C-Roads Pilots and share experiences;
- to assess the impacts of C-ITS introduction on European roads.

Luca referenced the 'Evaluation and Assessment Plan v. 1.1, July 2019' available at www.c-roads.eu. He noted that the first phase of C-Roads will end in December 2020 and that the second phase of C-Roads is already starting and focussing on the city. He then summarised the use cases that are subject to evaluation and assessment, such as:

- In-Vehicle Signage (IVS);
- Hazardous Location Notification (HLN);
- Road Works Warning (RWW);
- Signalized Intersection.

As well as the impact areas considered in the evaluation process, such as:

- User Acceptance;
- Safety;
- Traffic efficiency;
- Environment;
- Socio-economic.

Luca mentioned that the core objective of Pilots is to better understand the effects of providing C-ITS services to the users. He also stated the importance of measuring users' behaviour changes of driver/vehicle. During the field tests it is possible to measure different parameters that can reveal changes to driver behaviour due to the receipt of information via C-ITS. The measurement of changes in user behaviour also provides a first indication of the impacts, at a field test level, of C-Roads implementations.

Luca then mentioned the definition of a shared approach for the calculation of KPIs on mobility when C-ITS will be more widely diffused, starting from the data measured or calculated during the field test. This estimation will be based on algorithms, traffic modeling and even through qualitative estimation. Definition of a shared approach for the assessment of the (economic) benefits of the C-ITS services generated by the KPIs.

Luca closed this point by sharing the final step, which is the definition of a common and shared approach to assess the impacts of C-ITS on mobility starting from measures collected during field tests.

Luca then described the difference between acceptance and acceptability, and the key questions that were formulated to assess both, as well as the differentiation in the timing at which they are calculated: acceptability is measured before the usage of C-ITS and acceptance is measured after. He also provided an update about the current state of the work:

- End of the Ex-Ante Phase (Production of two reports) – (Finished);
- Intermediate Phase → Traffic Modelling Activities – (On-Going);
- Ex-Post Phase → Designing activities for C-ITS field tests – (On-Going);

Luca shared the on-going evaluation activities across C-Roads Italy, the Pilot in Spain and InterCor (NL) and the following points were discussed:

- VMS cannot be switched off so it's difficult to looking into the impact of C-ITS and VMS;
- One thing that hasn't been investigated is Human Machine Interface (HMI) so it's difficult to understand if the information is displayed in a user-friendly way and if the way that the HMI is designed is influencing (or might be influencing) the results and behaviours;
- Enforcement isn't part of the test – otherwise it wouldn't be possible to differentiate whether results are the effect of C-ITS or enforcement;
- Similar problems exist in the evaluation of ITS and C-ITS;
- There is an ongoing debate with regards to 5G vs ITS G5 and the potential market share.

As it was raised during this session, each project has their own objectives, therefore, an approach that fits all doesn't exist and it wouldn't be appropriate.

Session 2 – Automated driving: How safe is safe enough?

Speaker(s): Merja Penttinen, EU EIP A5, NEXT-ITS, VTT;
Objective(s): Share insights with regards to automated driving and the case around safety.

Merja discussed about the common assumption that increased automation of road transport is expected to have great impact on traffic safety. According to NHTSA, human error played an important role in 94% of fatal accidents in U.S. Therefore, automation has been suggested to have potential to eliminate most of the severe accidents in road traffic, although this sort of straightforward thinking has also been criticized. Human factors will remain as part of the road transport system for as long as there is at least one human in the system.

As Merja noted, even if the vehicle is equipped with automated driving functions, the usage will not necessarily be 100% all of the time. Hence, user acceptance of automated vehicles may be one barrier in the fast uptake of automated vehicles, even if the technology development proceeds quickly.

KPIs for safety in the context with Autonomous driving were also discussed, such as:

- Number of crashes in total, and per 100 million km;
- Numbers of conflicts encountered where time to collision (TTC) is less than a pre-determined threshold / 100 million km;

- Number of instances with hard braking (high deceleration) / 1000 km;
- Number of instances where the driver is required take manual control / 1000 km (automation levels up to L3);

Merja made reference to a study published in this area which demonstrated that:

- At roundabouts, conflicts seemed to be increasing between baseline and 25% penetration rate, but then decreasing, being 29% to 64% less with the 100% penetration rate than in the baseline (0% AVs).
- At signalized intersections the conflicts decreased with the increased penetration rate, and the reduction of conflicts was 20% to 65% with the penetration rates between 50% and 100%.
- The authors conclude that a high penetration rate might be required to deliver AV's anticipated safety effects.
- "The majority of traffic fatalities occurred on rural roads. Inappropriate and relatively high speeds in combination with the lack of physical separation, poorly maintained roadsides, and mixed traffic involving vulnerable road users are characteristic for many rural roads and increase the occurrence of road crashes as well as their severity."
- "The number of road deaths in urban areas is increasing … Motorways are the safest roads." (Source: ITF 2019. Road Safety Annual Report 2019)

It was a very interesting session that raised some 'thought-provoking' issues:

- There is a very high hope that automation can support limiting fatalities, but different researches demonstrate that that it isn't a realistic view, as the most fatalities are happening in rural and urban areas in which is AVs would struggle to handle these scenarios (in particular the shape of roads and speed);
- However, there is still a potential for AVs to be used in niche applications and use cases and provide benefits in the next 5-10 years;
- There is also evidence that the mix of connectivity and automation is actually a very powerful combination which can provide a wider range of benefits.

Session 3 - How to evaluate a corridor when a corridor project may have deployed ITS at specific points on the corridor route. The challenges and potential solutions.
Speaker(s): Bernard Fer, EU EIP A5 MedTIS, (ASFA)
Objective(s): Understanding whether we realistically achieve this, and if there's potential for a unified approach.

Bernard started this session stating that the main objective of project impact evaluation was 'to demonstrate how the co-ordinated deployment of ITS services can deliver tangible benefits' in terms of:

- Safety;
- Network efficiency;
- Environment.

He then talked about the focus of the evaluation process of MedTIS:

- Evaluation of progress indicators;
- Evaluation of socio-economic impact;

MedTIS needs to provide impact evaluation to the EU EIP platform that consolidates results from multiple projects and fosters cross-fertilisation (cross corridor knowledge sharing).

Bernard reminded the audience of the key objectives that MedTIS projects are trying to achieve, such as:

- Better and Faster detection (CCTV, incident detection system software, artificial intelligence);
- Better and Faster information (On board information, VMS);
- Better and Faster action (response time reduction/ improved on site protection / improved traffic control and management).

The direct or indirect impact of all these deployments:

- Faster alert time / response time
- Faster intervention in case of an event
- Potential reduction of secondary accidents occurrence= reduction of accident numbers
- Improved safety / reduced congestion

Bernard demonstrated how to make an overall evaluation of the MedTIS impact on the entire corridor:

- Which must be carried out as soon as the program is finished;
- Which must focus on the main objectives of the program;
- Which must integrate all the projects of the program;
- Which projects have deployed ITS at specific points on the corridor route;
- Which must be significant and meaningful for the whole of decision-makers and stakeholders.

Bernard then explained why they need to use this methodology:

- To agree with the right improvement rate to select (-1.6% in MedTIS) or to select another one;
- To apply safety and congestion data (all network and year before project) according to their availabilities.

Session 4 - Measuring CNC Corridor Performance – What KPI's could be used?
Speaker(s): Jan Willem Tierolf (RWS)
Objective(s): Measuring CNC Corridor Performance – Understanding what KPI's could be used and what is the current thinking in the EU concerning the future of ITS. What should we collectively be aiming at to attract more investment in ITS?

Discussion about the policy change and its evolution was held during this session. Jan Willem noted that:

- New commission published the Green deal:

- o Ambition to become carbon neutral by 2050;
- o Need for road-charging systems all around Europe.
- Electric Vehicles opens up new business models with regards to having a digital payment that allows people to manage their car with a flexible bundle everywhere no matter the supplier;
- Inter-modality across Europe is an important theme – need of system integration is key.

He also noted that the European green deal is about improving the well-being of people and making Europe climate-neutral:

- The EU will become carbon neutral by 2050;
- Protect human life, animals and plants by cutting pollution;
- Help companies become world leaders in clean products and technologies;
- Help ensure an inclusive transition.

Jan Willem discussed the need to reduce transport emissions further and faster and the importance to use digital solutions, also as a next step for CNC corridors, once the hard infrastructures are there, to enhance their performance:

- Automated mobility and smart traffic management systems to make traffic more efficient and cleaner;
- Smart applications and 'mobility as a service' solutions will be delivered.

Session 5 - SWOT of current KPI's are they still relevant, should there be others?

Speaker(s): Tobias Reiff, Orestis Giamarelos (EU EIP A2, BASt);

Objective(s): Are the current KPI used by EUEIP suitable, can we learn from other methodologies presented during the workshop, should they be updated, do they deliver what is required for each of our stakeholders? What could be used by the CNC?

During this session the attendees were required to split in two different groups to:
- Reflect on the strengths and weaknesses of current KPIs used by EU EIP;
- Reflect on what we can learn from other methodologies.

The above questions raised by Tobias and Orestis generated interesting discussions and an extract of the points raised by the two working groups is available below:

Current KPIs used by EU EIP – Strengths:

- Impact KPIs;
- KPIs are understood, well defined;
- In line with green deal.

Current KPIs used by EU EIP – weaknesses:

- Need for ante / post evaluation, but no post is available / possible;
  - o Better methodology needed;
  - o Processes need to be enhanced.

- Snapshot evaluation results cannot be extrapolated.

Can we learn from other methodologies? – Opportunities:

- Yes!!!
- Use other methodologies to improve our output and increase relevance of our data;
- To develop a unified cross-corridor methodology with perhaps more enforcement;
- Digital transport and logistics forum;
- Holistic/ generic estimates for the corridor;
- Transport methodology;
- Harmonisation - up-scaling of the results;
- Evaluation framework -> toolbox for various situations.

Can we learn from other methodologies? – Threats:

- Not aware of the original hypothesis;
- Assumptions are not measurable at the moment;
- Dependencies of political decisions;
- 'Double-counting' the benefits;
- Gap in methodology to include soft benefits;
- Variety of methods results into variety of estimates;
- How to decide on realistic impacted areas;
- How to include the changes/ trends happening without ITS deployment.

Conclusions and closing remarks

Speaker(s): Paul Wadsworth, Arc A Corridor (Capita), Tobias Reiff A2 (BASt);
Objective(s): wrap-up the 2-day session and discuss about the next steps.

The following considerations were summarised as key points at the end of the 2 day workshop, some of which would need to be further discussed:

- Need to apply what Capita presented across projects by reviewing CO_2 methodology calculation, and how it can be applied in projects;
- Each project has their own objectives and therefore a common evaluation approach that fits all isn't feasible;
- There is an agreement that KPIs shouldn't be changed, additions to the current KPIs could be considered as new KPIs become more defined, particularly in newer areas such as C-ITS and Automated Vehicles;
- There is a need to create a set of recommendations for future KPIs;
- Methodology should be reviewed – there is a need to consolidate the evaluation process;
- There is a need to clarify the scope of A5 and corridors;
- 2020 is going to be the right time to influence the next steps for the programme – there is a need to create a strong political story;
- There is a need to play a stronger role in digitisation;
- Need to focus on data and insights – to use NAP as a backbone.

Annex 1 – Attendees

The following table provides the full list of attendees.

	Name	Country / Representing
1	Daniel Cullern	UK / EU EIP A5
2	Paul Wadsworth	UK / Arc Atlantique
3	Noémie Frontère	France (ASFA)
4	Orestis Giamarelos	Germany (BASt) / EU EIP A2
5	Inês Viegas	Portugal
6	Carole Ciliberti	UK / EU EIP A5
7	Stephanie Kleine	Germany
8	Walter Zimmermann	Austria / Crocodile
9	Paola Mainardi	Italy / URSA MAJOR
10	Inaki Eguiara Garay	Spain / Basque DT
11	Renata Lajas	Ireland
12	Malika Seddi	France ASFA
13	Torsten Geissler	Germany BAST
14	Daniela Carvalho	Portugal
15	Henk Taale	Netherlands
16	Bernard Fer	France ASFA / MedTIS
17	Merja Pentinnen	Finland / NEXT ITS
18	Petri Antola	Finland / NEXT ITS
19	Tobias Reiff	Germany BASt / EU EIP A2
20	Federico Marsili	UK / EU EIP A5
21	Jessica Rausch	Germany
22	Ronald Jorna	Netherlands
23	Henk Jansma	Netherlands
24	Luca Studer	Italy / C-Roads & Ursa Major neo Member
25	Jan Willem Tierolf	Netherlands
	Total	**25**