

Final report International Conference on Asphalt 4.0

#ICA4point0

Last 20 and 21 September ASEFMA and ZAS with the participation of EAPA, hosted in Madrid the first International Conference on Asphalt 4.0 (ICA 4.0), organised by a reference event which already has become a mandatory appointment on the agenda of the asphalt industry regarding digitisation of the sector, and whose second edition in September 2023 has already been announced, see <https://ica4point0.com/>



Video Asphalt 4.0 from ZAS, <https://vimeo.com/user14893125/zas>

Touch de image to see the video

Divided into an intense two-day program, up to 24 speakers participated in this **#ICA4point0**. Their interventions could be followed in person in the Spanish capital, as well as by HD streaming through the platform itafec.com

The sponsoring companies of this first edition were MOBA, main sponsor, and Fliegl as bronze sponsor.

In this very first edition, 12 technical communications have been received from 5 countries: 4 from Spain, 3 from Germany, 2 from Slovenia, 2 from the Netherlands and 1 from France. The 12 texts are part of the Proceedings of the International Conference and all of them were presented by their authors on September 20 and 21.



Video Asphalt 4.0 from Asefma, <https://vimeo.com/user14893125/asefma>

Touch de image to see the video

The International Conference was developed in PDV format: Presencial, Digital and Virtual, with over 100 attendees from the following 12 countries: Spain, Slovenia, Germany, USA, Netherlands, France, Denmark, UK, India, Suriname, Portugal and Italy.

After the opening of the International Conference on Asphalt 4.0 by Xavier Flores, Secretary General for Infrastructures of Ministry of Transport, Mobility and Urban Agenda, together with the Presidents of ZAS, Slovenko Henigman, and Asefma, Juan José Potti, the Technical Director of PIARC, Miguel Caso, offered an interesting conference with a broad overview of digitalisation in the chain value of asphalt paving roads.

During the inauguration Xavier Flores stressed that in his opinion, "*... in our society two major revolutions are taking place at the same time: the environmental demands produced by climate change, and all changes derived from the digital transformation of all activities*". In addition, he supported the organization of this annual International Conference, in which ideas and experiences can be exchanged among stakeholders.



Round table Session 1 moderated by Dr. Carsten Karcher

¿Which ideas can be highlighted or have been most noteworthy?

It is difficult to highlight the most attractive or striking in just one line, but perhaps the following ideas should be outlined:

- Digitisation must be used to quickly achieve the current environmental objectives more quickly. It is 2 revolutions at the same time and maybe even 3, if we add energy scarcity.
- The effectiveness of road administrations investments can be assessed based on big data analysis of the behaviour of vehicles on the road after implementing these investments.
- It does not seem logical to add to the EN 12697 series new standards on the management of digital thermographic data, for example. Perhaps at this moment, what seems more appropriate is to provide new criteria for the evaluation of tender proposals. In this way, asphalt mix manufacturers can offer the administration and citizens access to:
 - emissions data from producers during the manufacturing phase in such a way that the price is quoted and the associated emissions are quantified.

- emissions data during the transport phase to the site to be able to assess the emissions associated with the transport to each site as well.
- emissions data during paving and compaction operations using the same approach to assess and quantify the associated emissions.

There would be 3 options to assess, each one of them or, failing that, provide data from a sectoral DAP.

- Beyond the use of IoT (Internet of the Things), blockchain and artificial intelligence, two very interesting applications of digital models (Digital Twins) were presented in this first edition of the International Conference on Asphalt 4.0:

- Digital models for the design of bituminous mixes
- Digital models for the visualisation of asphalt laying: paving and compaction sites



Round table Session 1, 20 september 2022

Streaming HD

The "International Conference on Asphalt 4.0" was followed on the itafec.com platform by 346 users or viewers. The average viewing time was 232 minutes. The distribution of viewing, by country, was as follows: Spain, Mexico, Denmark, Brazil, Peru, Portugal, Thailand, Turkey, France, Colombia, Chile, Guatemala and Argentina.

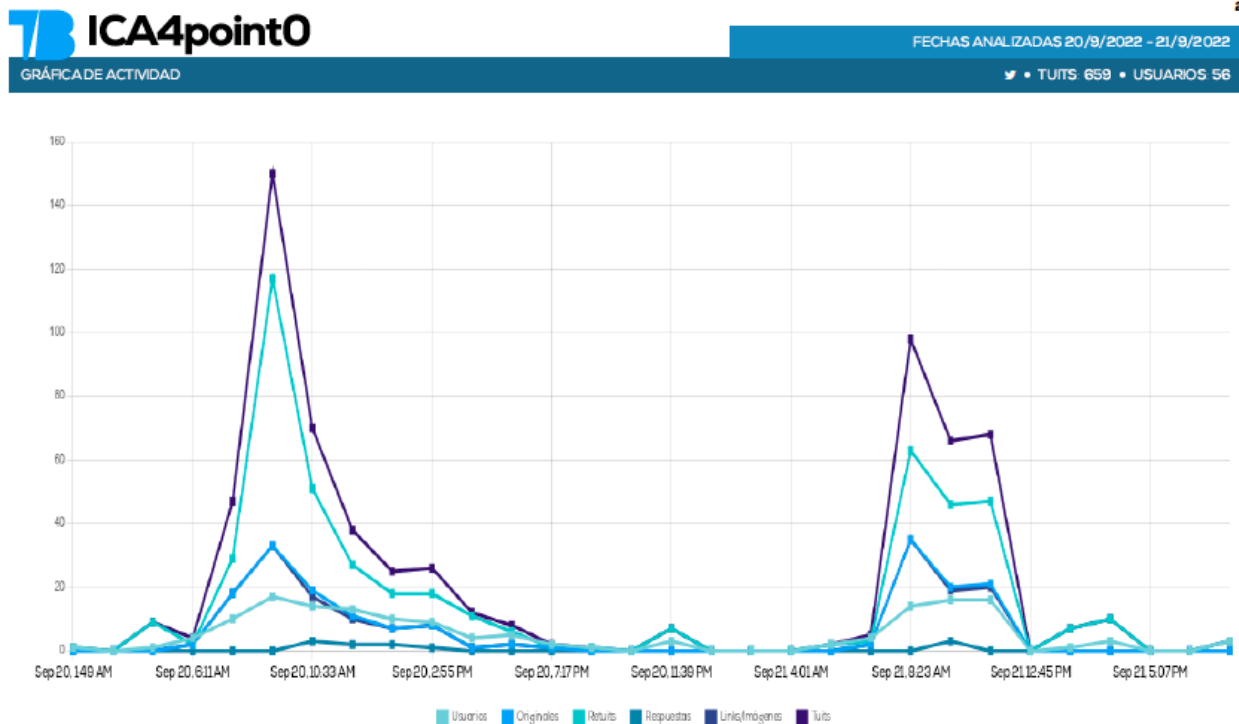


Presentation of José Luis Peña, Asefma

During which sessions most digital activity could be observed?

The peak of highest activity was registered on the first day, during the Session 1 "Digitalization: a shared space between road administrations and road contractors". This session started with a round table, moderated by Carsten Karcher and with the participation of Xavier Flores, Juan José Potti and Slovenko Henigman and continued with the presentation of technical papers by José Luis Peña (Asefma) and Mitja Jurgele (DRI Investment Management). At 11:05 on the 20th september, 150 tweets were issued.

With around 100 tweets, the second most relevant peak was reached on the second day, during the Session 4 "Digitalization applied to maintenance and use stage of roads". This session was moderated by Juan José Potti with the participation of Aida Marzá (Becsa), José Ramón Albert (Pavasal), Pilar Peiró (Group Symmetry) and Berwich Sluer (Boskalis Nederland).



Evolution of social media activity using **#ICA4point0** during the 20 and 21 september

Data provided by Tweet Binder showed that the five most active users over both days were Asefma ([@asefma_es](#)) with 148 tweets, the technical institute itafec ([@itafec](#)) with 136, EAPA ([@eapa_org](#)) with 72, Juan José Potti ([@jjpotti](#)) with 52 and ZAS ([@ZdruzenjeZas](#)) with 28 tweets.

In terms of Twitter followers, data from the Tweet Binder measurement tool confirmed that a total of 56 participants issued up to 659 tweets containing the hashtag **#ICA4point0**. An enriching high-level debate that reached 4,944,236 impressions and an estimated audience of 275,628 users.

One event with three different modes of participation

As it was a PDV event, participants were able to experience it physically in Madrid, digitally through the aforementioned hashtag and virtually thanks to the PDV by itafec application, which allowed participants to get the utmost



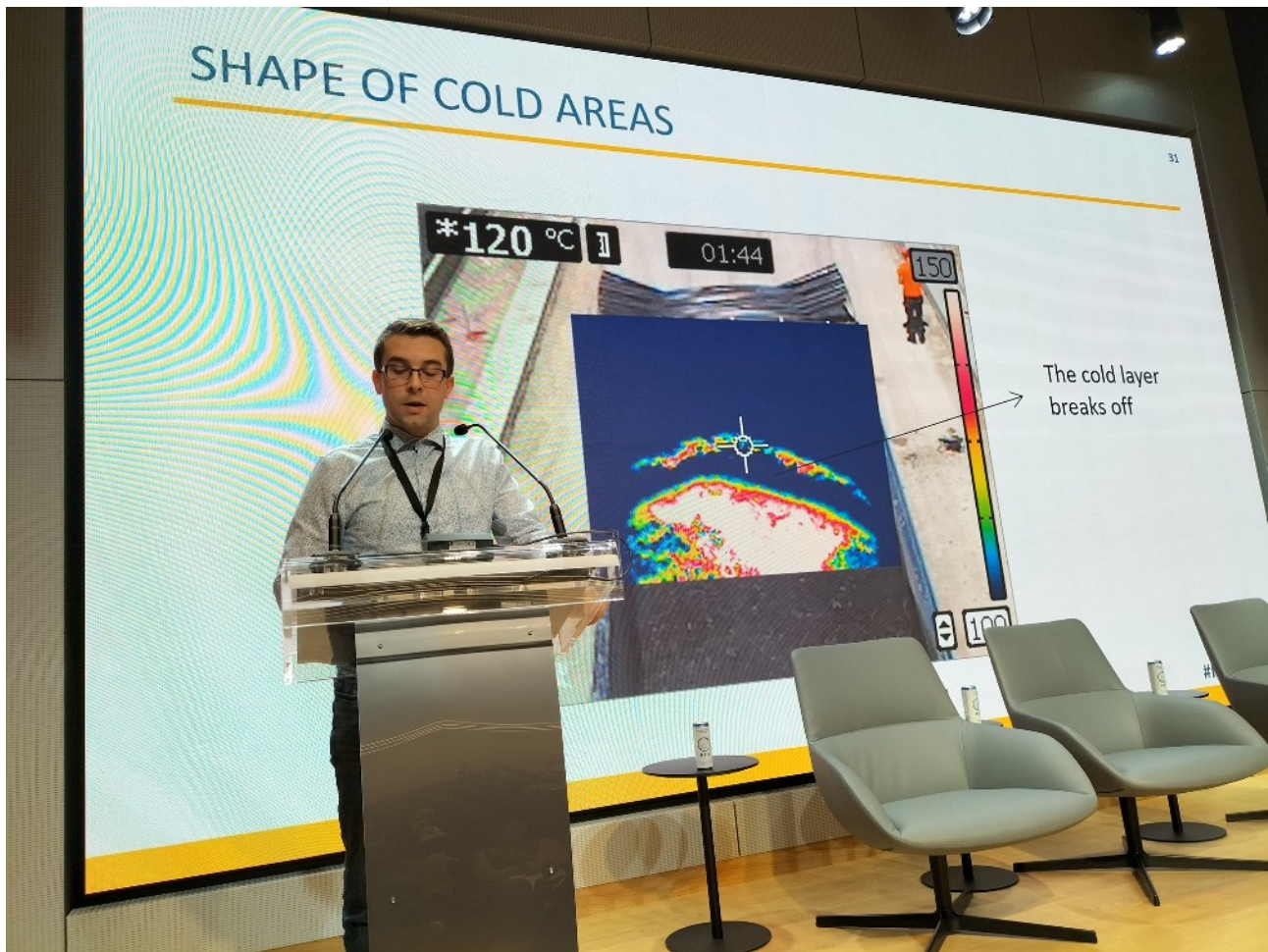
Coffe break, 21 september 2022

out of the event thanks to the possibility of interacting between users and speakers, consult the constantly updated programme, attend the presentations, visit the virtual stands, etc.

From the days before to the congress, all attendees who downloaded the "PDV by itafec" application had access to the 12 papers presented and the possibility to contact the respective corresponding authors, if they so wished, thus stimulating digital interaction.

The App also allowed attendees to ask questions to the speakers during their presentations. The coordinators of each of the sessions were in charge to expose these questions. Session 4 "Digitalization applied to maintenance and use stage on roads" was the session that gathered the highest number of questions on the App by the virtual attendees.

Another of the peculiarities of the application is that attendees were able to interact with each other. In total, 100 conversations were held on the App platform.



Presentation of Rok Roser, Session 2

At what point are we now?

The **#ICA4point0** was born from a need detected by Asefma and ZAS, shared by EAPA. As could be seen during the first session, the Public Administrations also shares the interest and objectives of the digitalising of the paving sector, but it was necessary to create forums in which administrations could work together with companies, associations, universities, etc...

There are numerous full-scale experiences in the use of BIM (Building Information Modelling) in both the design and the construction and maintenance phases of roads. The most common use of BIM is in the generation of As-Builts as there are few new road infrastructure projects.

There are also numerous experiences in the use of guidance and surveying technologies that allow the transfer of digital documentation to the machinery working at the paving sites.

Another area, in which digitalisation is extensively being developed is quality control, where quality verification of the whole pavement is starting to replace traditional quality controls based on random sampling.

To conclude this description of proven fields of application for digital solutions, it is worth underlining the use of analysis based on big data from measurement and control systems that are already installed in many vehicles to fulfil other functions and that could have a dual use.

What needs to be done?

The user experiences that were presented during [#ICA4point0](#) are examples of projects or developments that are already operational and are being implemented by companies and/or Road Administrations.

However, digitalisation reaches its full potential when the flow of information operates in what is defined as “seamless mode”.

The different technologies that include both hardware and software require protocols that enable the efficient communication between clients and suppliers. In this sense, there is a need to develop protocols and platforms for the transfer and use of information that are accessible to all actors involved in road construction and maintenance.

The road paving sector is in its vast majority dependent on Public Administrations, which are the apex where a multitude of suppliers converge, so it is up to them to coordinate the task of standardising the processes that allow the flow of information.

What means are necessary?

Although any transformation of a production model requires investments, given the fact that the evolution and implementation of digitalisation on a large scale will take a relatively long time, the annual investments required are perfectly affordable for companies and Road Administrations.

At a company level, the main investments will be dedicated to the adaptation of production systems, especially through sensorisation, while in the case of Public Administrations, the resources will go to management software and to increase analytical capacity of technicians for the new information flow processes.

The human factor is the main bottleneck: the paving sector is a mature sector with highly skilled in civil engineering, but with little experience in the use of advanced digital systems. If we add to this the fact that the

replacement rate of new professionals is very low, due to the scarcity of investment in the road sector, we find ourselves with a shortage of suitable professionals, which is a major handicap.

Digitalisation, which can make our sector more dynamic and requires a high level of technical training, should be used as an element of attraction for new potential professionals.

Creating awareness within the sector of the need of speeding up the digitalization process is a prior step towards achieving the desired objectives, and events such as [#ICA4point0](#), provide the essential information for making the right decisions.

Final conclusions and objectives

This first edition of the International Conference on Asphalt 4.0 offered, in the opinion of the participants, many positive points.

It is clear a great deal of digital solutions is already being implemented by companies, universities, administrations, associations, technology centres, etc., but it was necessary to provide a meeting point, like the [#ICA4point0](#), for all involved stakeholders to analyse together from different points of view and solve the digital challenges in the paving sector.

The sense of working in isolation and the need to debate on and collaborate in the development of 4.0 solutions stimulate the kind of meetings and debates at the International Conference on Asphalt 4.0.

One of the major obstacles of this digital challenge is the lack of previous references. For example, for the European standardisation work, where each country can normally provide previous national standards, which can be taken as a basis for the development of European documents. Hence, the challenge consists mainly in assessing and integrating the existing references into the new documents. In digitalisation, the challenge is global and in most cases, there are no national references that can be used. Possibly, the emergence of new technologies will force us to constantly reconsider which is the best option available.

In the light of this ever-changing and dynamic scenario, it seems particularly important to organise an annual meeting, like the International Conference on Asphalt 4.0 [#ICA4point0](#)

Another conclusion achieved from the debates was the role of national associations, and in particular EAPA. As a European benchmark, it can benefit from the conclusions of [#ICA4point0](#) to stimulate short- and

medium-term objectives and to collaborate in the dissemination of existing digital technologies.

After all previous considerations, it was agreed that the second edition of the International Conference on Asphalt 4.0 would be held in Madrid, on 26 to 27 September 2023.

Please stay tuned at <https://ica4point0.com/> and on social media, with the hashtag [#ICA4point0](#).