Technical Report 2018-01
CEDR-PIARC Winter maintenance workshop
Users’ needs at the heart of winter service

July 2018
Authors:

This report was drawn up by the

Direkcija Republike Slovenije za infrastrukturo (Slovenian infrastructure Agency)

Mr. Bine Pengal (group leader)

With contributions from the following countries:

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<th>Country</th>
<th>Author(s)</th>
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<td>Finland</td>
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<td>Mr. Luis Azcue Rodriguez</td>
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Summary

CEDR working group 3.4 Winter service was tasked with preparing a programme for the workshop on the topics of winter maintenance and service. Workshop was to be organized at the occasion and in parallel with WRA-PIARC 15th International winter road congress in Gdansk, Poland in February 2018.

The group was also given the mandate to liaise with winter service experts from WRA-PIARC and coordinate the programme with them in order not to duplicate contents with the rest of the technical sessions at the congress.

The official title of the workshop was drafted as *Users’ needs at the heart of winter service* and its intention was:

- to exchange best practice in addressing users’ needs in winter conditions,
- provide examples and solutions for road infrastructure owners and managers in their interaction with different categories of road users,
- ensure added value by collaboration with WRA-PIARC experts, and
- encourage other CEDR working groups and PIARC technical committees and task forces to enhance the cooperation between the two associations.

After the consultation within the working group and coordinated with PIARC Technical committee B.2 Winter service, it was decided that the topics of the workshop should be dealing with:

- interaction with road managers (NRAs and other),
- operational issues of different types of road users,
- standards in winter service.

The workshop was operationally carried out on the 22nd February 2018 at the Amber Expo conference centre in Gdansk as planned. It was successful with reasonable attendance and with quality speakers and topics. First feedback from the participants as well as from the speakers was very positive for both sides – CEDR and PIARC.

Speakers came from Germany, Italy, Hungary, Poland, Slovenia and Spain. Titles of their presentations were:

1. New developments concerning winter maintenance on bicycle lanes
2. Winter road maintenance 4.0: how the technology improves safety and efficiency of drivers
3. Road users’ expectations and opinions: a survey concerning winter road service in Hungary
4. Winter maintenance of national roads in Poland - methods and forms of effective communication
5. Winter maintenance on roads and railways in Slovenia
6. Determining the standards in winter service

Workshop proved to be a valuable opportunity for experts to see what kind of strategies and activities states are using in their communication with various categories of drivers and their different needs. Collaboration with WRA-PIARC again proved valuable and is to be expanded either on this and/or possibly other topics.
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1. Preparation of the workshop

1.1 Composition of the working group

All together, ten countries supported this activity in the CEDR Action plan 2017-2019 and decided to delegate their experts. These countries were:

- Austria,
- Finland,
- Germany,
- Hungary,
- Italy,
- Netherlands,
- Norway,
- Poland,
- Slovenia (leader),
- Spain.

Norway reported soon after the beginning of the work that they are cancelling their participation to this group and called off their representative, so nine countries participated at the end.

1.2 Drafting the programme

The group started working on the preparatory activities based on their experience from organizing the workshop on the topic of MDSS (maintenance decisions support system) in winter service in 2016, in Warsaw. First contact to the working group members was made by the group leader in April 2017, informing them about the start of the activities and inviting them to Ljubljana for a live meeting.

1.2.1 Meeting in Ljubljana

The meeting was held on 7th June 2017 in Ljubljana, Slovenia with the participation of representatives from 3 countries out of 9 that expressed their support to the group.

Group leader presented the background of organizing the workshop, the wishes of CEDR EB and GB, the proposed venue of the workshop and he also informed colleagues about the exchange of information with WRA-PIARC. It was advised to the group to take note of the already issued topics for the congress papers and not to duplicate these topics. However the group should try to form a program that would be complementary to the congress topics.

Discussion at the meeting touched various topics of winter service and maintenance, such as but not limited to:
Participants further supplemented and compared above mentioned topics with the ones, identified from the official programme of the WRA-PIARC winter congress (to be interesting for the workshop):

- Extreme situations, disasters
  - communication plans and management of crisis information
- Climate change and the environment
- Road weather information
  - best practices in using road weather information including; increasing user acceptance and public support, dissemination of weather, traffic and operations information, the use of real time information
- Road users and road safety
  - types of road users and their special requirements for winter maintenance (e.g. lorries, cyclists and pedestrians)
  - economic effects of winter and winter maintenance, better traffic flow, travel time reliability
  - communication and road user information, social media, user feedbacks, complaint management;
  - driver education for winter driving
  - global advice and information to users when travelling
- Winter maintenance management and planning
− road users' needs; how to define the right level of service
− relationships between all parties / stakeholders (managers, operators, road users etc.)

• Equipment and products
• Winter service in urban areas
  − treatment methods and vehicles for winter on bicycle lanes
  − how to create a continuous bicycle lane network with different types of infrastructure during winter?
  − sidewalk and pedestrian areas, accessibility, tactile paving maintenance
• Tunnels and bridges
  − implications of winter event or winter operations on the behaviour of the users

We then drafted the topics for speakers to further discuss and coordinate them with colleagues from TC B.2:

• What are the users’ different special needs in winter time? What kind of information they expect/need in winter time? (car drivers, truck drivers, cyclists…)
• How can/must NRAs address these needs and provide information to the road users? (taking into account the special circumstances of winter weather)
• Education of road users for winter driving/behaviour on roads
• What technologies are available for providing the information to the road users?

The conclusion of an otherwise successful meeting in Ljubljana has been that group leader communicates these discussions and draft topics first to other colleagues from CEDR working group for eventual comment and second to colleagues from PIARC TC B.2 to further elaborate the topics with them.

1.2.2 Coordination with PIARC TC B.2

Coordination with WRA-PIARC was operationally carried out through an email correspondence with the chairman of the Technical committee B.2 Winter service, Mr. Didier Giloppe and with the deputy Secretary general of WRA-PIARC, Mr. Robin Sebille.

During July and August of 2017 a finalized draft programme for the workshop was prepared and we asked for feedback and input from members of TC B.2. The draft programme sent to the TC B.2 was as follows:

1. Education of road users for winter driving/behaviour on roads
2. Who should determine the standards in winter service: road users or NRAs?
3. Truck drivers as a special category of road users (their special needs and behaviour in winter time)
4. Maintenance of bicycle lanes in winter time (in urban and especially outside urban areas)
5. Providing accurate and in-time information to road users in winter time (What kind of information they expect/need in winter time? - car drivers, truck/lorry drivers, cyclists… What technologies are available for providing the information?)
6. NRAs dealing with road users in winter time (How, to what extent can/must NRAs address the needs and provide information to the road users? How can NRAs run a successful PR campaign in winter time?) - the expectations of road users are always very high in winter time; they pay for the service and then they demand/expect drivable and clean roads 24/7; but NRAs can’t provide that 100% because of budgetary and other constraints

Their reply was that the technical committee will discuss the congress programme and also the programme of CEDR/PIARC workshop at their next meeting at the beginning of October 2017 in Trondheim, Norway. At that meeting they will also officially include the workshop in the programme of the congress and designate it a venue and timeslot.

In the meantime we got a confirmation from organizers of the congress from Poland that the workshop will be included in the official programme of the congress and also publicized accordingly.

1.2.3 Finalizing the contents of workshop programme and speakers

The reply from TC B.2 after their meeting in Trondheim was that “that the subjects were too close to the subjects of the congress”. Therefore they proposed their own list of possible topics:

1. Winter service standard
   - Definition of level of service: means or objectives
   - Principle of allocation of service levels, possible variations.
   - Performance indicators and measures, definition and use
   - Should there be a European strategy for levels of service?
   - How to define the rigor of winter on road network: consider a winter index declinable on Europe?

2. Cross border and general rules
   - What is the value of harmonizing regulations at a European level?
   - What should be prioritized?

3. A European Communication
   - Coordinating voice and communication at European level
   - Standardize messages
   - What information to give, what formatting, how to ensure a good understanding by all

And some further topics for discussion, such as: Winters tyres snow tyres when and where? Studded tyres, chains and socks; Authorization to overtake winter service vehicles; Specificities of the Highway Code and road signs; Creation of convoys; Storage of lorries, etc.

After reviewing all the propositions and comparing that again with the already drafted programme, the final proposal for the workshop programme was elaborated:

Contents will cover three categories of topics:

- **Category 1**: Interaction with road managers (NRAs and other)
- **Category 2**: Operational issues of different types of road users
- **Category 3**: Standards in winter service
Topics for presentations that were offered to the potential speakers were:

- Multimodality in winter time – operational reality or just wishful thinking?
- Determining the standards in winter service (who should determine the standards: road users or NRAs? Is there the need to harmonize regulations for winter service at a European level? Should there be a European strategy for levels of service?)
- Truck drivers as a special category of road users (their special needs and behavior in winter time, creation of convoys)
- Maintenance of bicycle lanes in bad weather conditions (in urban and especially outside urban areas)
- Running a successful PR campaign in winter time?
- Measuring the satisfaction of road users in winter time (performance indicators and measures, definition and use; the expectations of road users are always very high in winter time; they pay for the service and then they demand/expect drivable and clean roads 24/7; but NRAs can't provide that 100% because of budgetary and other constraints)

This programme was then agreed also by PIARC TC B.2 and we began sending emails and notifying all involved in the preparation of the programme, to propose the speakers. Speakers were finalized at the end of January 2018 (for speakers’ CVs see Appendix II).

1.2.4 Finalizing the official agenda

After having finalized the content, the official agenda (see Appendix I) was also finalized. The event itself was envisaged to include six presentations and after the coffee break a live discussion at round tables would follow. This proposal was also communicated to PIARC, asking the organizers to provide the seating arrangements and tables in the room accordingly. The response from WRA-PIARC was positive in this respect.

For the purpose of stimulating the discussion at round tables, four questions were prepared and coordinated with PIARC representatives:

1. What would you estimate is the general opinion/public image of NRA in your country as regards winter service? Do users appreciate or rather argue its actions? If necessary, how would you improve it?
2. What do you think about obligational education of drivers for winter driving? Do you support/oppose to that idea? If obligational, who should organize and pay for it?
3. Is there the need to harmonize regulations for winter service at a European level? Should there be a European strategy for levels of service?
4. What is your opinion on multimodality in winter service? Do you think it is (or will need to become) doable in the future? Or should different transport modalities plan and execute their own winter service?
2. The course of the workshop

The workshop was carried out on the 22nd February 2018 from 8:30-12:30 in meeting room No.2 at the Amber Expo conference centre in Gdansk, Poland. The workshop was opened by CEDR group leader who later moderated the event. In the name of CEDR, Mr. Roman Limbach, member of CEDR Executive board from Germany, welcomed the participants and said some introductory words, emphasizing amongst other things successful cooperation between CEDR and PIARC.

Technical presentations followed. As the seating arrangement in the conference room was positioned in “classroom” rather than “round tables” as agreed, the leader decided to adapt the agenda and course of the workshop accordingly. He informed the participants that there will be no planned discussion in round tables and that the Q&A is possible all the way during the workshop. To make good use of time, the moderator also decided not to time-limit the speakers.

At the second half of the workshop Mr. Robin Sebille from WRA-PIARC General secretariat joined the workshop and welcomed the participants on behalf of WRA-PIARC. He apologized for his absence at the start of the workshop and informed the participants that the presentations of the workshop will be available on WRA-PIARC’s website. He also proposed that an article be written about the workshop which will be published in the next edition of Routes/Roads magazine. He expressed his content with the workshop and cooperation between CEDR and WRA-PIARC and invited participants for further cooperation on other topics.

The workshop successfully finished 10 minutes ahead of scheduled time.
2.1 Technical presentations

There were two introductory presentations. First was done by the leader of CEDR group who made a presentation on the background of choosing the topics and organizing the workshop. He summarized the activities of the past year that are also precisely reported in this document.

Second one was the presentation by Mr. Didier Giloppe, the chair of PIARC TC B.2 who presented current and planned activities of the technical committee on winter service. After Mr. Giloppe’s presentation followed technical presentations from 6 countries.

For all presentations see Appendix III, electronic versions are available in CEDR General secretariat.

2.1.1 Technical presentation 1 – Germany

Speaker from Germany was Mr. Horst Hanke and he gave a presentation with the title New developments concerning winter maintenance on bicycle lanes.

He spoke about bicycle use in Germany in general, legal duty of winter maintenance on bicycle lanes, actual situation of winter maintenance, traffic characteristics in winter time and about new techniques for maintaining bicycle lanes in winter.

2.1.2 Technical presentation 2 – Italy

Actually three speakers came from Italy, that together gave 2 presentations. First presentation was given by Mr. Enzo Giletta with the title Winter road maintenance 4.0: how the technology improves safety and efficiency of drivers. Mr. Giletta presented new software tool and application that was developed within the project Assist. The software was designed to relieve the snowplough driver of considerable amount of tasks while driving (from adjusting the snowplough, salt spreading, coordination with other snowploughs, etc.).

Mr. Roberto Mastrangelo started with the second presentation with the title Winter maintenance 4.0, which was then taken over by one of his colleagues. This presentation focused on the communication of winter service vehicles with road infrastructure (smart road), also further elaborating the software system presented in previous presentation by Mr. Giletta.

2.1.3 Technical presentation 3 – Hungary

Speaker from Hungary was Mrs. Ibolya Bali and she gave a presentation with the title Road users’ expectations and opinions: a survey concerning winter road service in Hungary.

She briefly explained the activities that road operator in Hungary is doing in relation to road users and information flow in their organization. The focus of her presentation however was on the survey that they carried out in Hungary among the general public (road users) and what kind of services they expect from road operators.
2.1.4 Technical presentation 4 – Poland

There were two speakers from Poland, Mr. Andrzej Kabzinski and Mr. Piotr Chalka, who gave a presentation with the title *Winter maintenance of national roads in Poland - methods and forms of effective communication.*

They first shortly presented winter maintenance in Poland in general and the rest of the presentation was focused on methods and forms of communication in winter service. Why communication is important, what kind of information are distributed, the importance of traffic communication centre, variable message signs, etc.

2.1.5 Technical presentation 5 – Slovenia

Speaker from Slovenia was Mr. Uroš Brumec and he gave a presentation with the title *Winter maintenance on roads and railways in Slovenia.*

Multimodality is becoming one of the more important challenges of modern transport authorities (also CEDR members). Uroš presented two modalities (road and rail infrastructure) and how they are dealing with winter maintenance in Slovenia, with more emphasis being on roads. Cooperation in practice is still not sufficient and efficient, it is under development, but obviously there are some common areas where a closer cooperation between road and rail winter service officers must be established.

2.1.6 Technical presentation 6 – Spain

Speaker from Spain was Mr. Luis Azcue Rodriguez and he gave a presentation with the title *Determining the standards in winter service.*

He first spoke about winter service management and then presented criteria and requirements for service levels that more or less are present in winter service standards in countries around Europe. He then proposed four criteria on which there is a theoretical possibility to base a common European winter service standard. He then moved to presenting the case in Spain and concluded that there is currently no political will to unify these standards.

3. Conclusions

For national road administrations and other transport managers, dealing with road users is an important part of their everyday activities. Knowing their needs and establishing a successful communication with them means that the road authority will enjoy a better public image. Consequentially that means more favourable public reactions to inevitable mistakes and in case of infrastructure failure. A well performing road administration knows that and nourishes such
connection with its users, with special attention given in winter time, when more severe road conditions present an added challenge for all parties involved.

The area of road users’ needs proved to be a broad one with many different aspects. It was not the intention of this workshop to address all of them, but to present the ones currently or recently in development in some countries. The topics which were discussed were:

- Multimodality in winter time – operational reality or just wishful thinking?
- Determining the standards in winter service
- Truck drivers as a special category of road users
- Maintenance of bicycle lanes in bad weather conditions
- Running a successful PR campaign in winter time
- Measuring the satisfaction of road users in winter time

Diversity of the above listed topics prevents one from drawing any special conclusions on the content part of the presented issues. On the other hand, exactly this diversity drives us to the conclusion that road authorities can’t tackle these issues so easily. They need to designate special personnel to address them. It also means that dealing with them requires the involvement and coordination of various departments, so one way or another, the whole administration is involved. Knowing different categories of road users, designing the standards of winter service with drivers in mind, maintaining special sections of road network (i.e. bicycle lanes), caring about people’s feedback and opinion on your actions (PR), evolving multimodality for the ease of mobility – all in all constantly bearing in mind the end user in every work you do. That is the challenge.

Mentioned topics do not relate to winter time alone but are rather time-independent. The workshop can be viewed as a reminder to CEDR members not to forget that. Low involvement and participation to the work of the group for organizing this event proves that NRAs currently see their priorities elsewhere, not realizing these issues are actually touching on all their activities, not just winter service.

WRA-PIARC cooperation on preparing the programme again proved valuable, although being rather re-active then pro-active. With some initial communication short-cuts later coordination went well and a short article on the workshop is planned to be published in the Routes/Roads magazine of the association.

No special recommendations for the future work of CEDR on the subject of winter service or road users in that respect can be given at this point. We would like to encourage however any other CEDR working groups to further cooperate with the experts involved in the technical committees of WRA-PIARC. They are knowledgeable and ready to share, the only drawback being that a lot of times it comes to the chairing person to decide how much value will be given to the cooperation with organisations outside their own.
4. APPENDIX I (agenda of the workshop)

Official agenda of the workshop

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<thead>
<tr>
<th>Time</th>
<th>Content</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>8:30 – 8:40</td>
<td>Welcome and opening of the workshop</td>
<td>CEDR and PIARC</td>
</tr>
<tr>
<td>8:40 – 8:50</td>
<td>Background on workshop topic</td>
<td>Bine Pengal</td>
</tr>
<tr>
<td>8:50 – 9:00</td>
<td>Presentation of the work of WRA-PIARC TC B.2</td>
<td>Didier Giloppe</td>
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<tr>
<td>9:00 – 9:15</td>
<td>New developments concerning winter maintenance on bicycle lanes</td>
<td>Horst Hanke</td>
</tr>
<tr>
<td>9:15 – 9:30</td>
<td>Winter road maintenance 4.0: how the technology improves safety and efficiency of drivers</td>
<td>Roberto Mastrangelo and Enzo Giletta</td>
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<tr>
<td>9:30 – 9:45</td>
<td>Road users’ expectations and opinions: a survey concerning winter road service in Hungary</td>
<td>Ibolya Bali</td>
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<tr>
<td>9:45 – 10:00</td>
<td>Winter maintenance of national roads in Poland - methods and forms of effective communication</td>
<td>Andrzej Kabzinski and Piotr Chalka</td>
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Break

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<tr>
<th>Time</th>
<th>Content</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>11:00 – 11:15</td>
<td>Winter maintenance on roads and railways in Slovenia</td>
<td>Uroš Brumec</td>
</tr>
<tr>
<td>11:15 – 11:30</td>
<td>Determining the standards in winter service</td>
<td>Luis Azcue Rodríguez</td>
</tr>
<tr>
<td>11:30 – 11:35</td>
<td>Forming of the working groups (number of the groups depends on the number of participants; expecting max. 4 groups in round tables)</td>
<td>All</td>
</tr>
<tr>
<td>11:35 – 12:05</td>
<td>Work in the working groups (discussing on the prepared questions)</td>
<td>All</td>
</tr>
<tr>
<td>12:05 – 12:25</td>
<td>Reporting from the groups back to all participants (max. 5 min per moderator)</td>
<td>Moderators</td>
</tr>
<tr>
<td>12:25 – 12:30</td>
<td>Closing of the workshop</td>
<td>CEDR and PIARC</td>
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Short CVs of the speakers

**Horst Hanke**
Mr. Hanke is a technical engineer and currently employed at German Road Administration. He has been working for more than 35 years in Roads and Traffic Research and Road Administration in the field of road maintenance but his special interest lies in winter service. He has worked on many winter service research projects, he is the leader of the German Winter Maintenance Group, Convenor of the CEN/TC 337/WG 1 Winter Maintenance Products, he has worked also in COST projects. He published many scientific papers on winter maintenance, he is a member of PIARC technical committee B.2 on winter service and a corresponding member of PIARC TC on Terminology.

**Roberto Mastrangelo**
Mr. Mastrangelo has worked as a project and site manager of infrastructural works in road as well as in rail sector. Since 2002 he works at ANAS S.p.A. and is currently responsible for network management and maintenance in the Directorate of Operation and Territorial Coordination. That includes protection of road assets, surveillance and early intervention in case of emergency in coordination with Police and the civil protection bodies. He is a member of PIARC winter service technical committees TC 2.4 (2012-2015) and TC B.2 (2016-2019) and a member of CEDR WG on winter service. He is also a member of several national associations and committees in relation to civil protection, road safety and crisis management.

**Enzo Giletta**
Mr. Giletta is a mechanical engineer that started his career in a family company Giletta S.p.A. From 2001 onward he is actively involved in winter service activities. He participated in the work for establishing the standard CEN TC337 “winter and road service equipment”, he is a member of the technical committee for winter maintenance equipment in Eunited association in Frankfurt. He is also involved in a number of national Italian technical committees and associations, related to research and innovation in winter maintenance. On international level he gave speeches in various congresses and events, related to winter service, such as The Nordic way congress in Sweden, IFAT Munich, Digital Industrial Transformation symposium in Unione Industriale Torino.

**Ibolya Bali**
Ms. Ibolya Bali has worked for the Hungarian Public Road Non-profit Plc. since 2006 and is already from 2011 a Head of Department for Road User Information Services. Since 2011, she has been coordinating tasks related to the stand-by duty and road user information services. She is actively developing the support and information system of the company and since the beginning she has been taking part in developing the EasyWay and call centre systems. She has been playing an active role in the implementation of the CROCODILE priority project and her duties also include networking and relationship building with the company’s associated organizations and cooperating partners.

**Andrzej Kabziński**
Mr. Kabziński is a technical engineer and a specialist in the areas of road safety, traffic engineering, road transport and logistics. He is currently enrolled in postgraduate study of modern road...
construction. He has been working for Polish road administration from 2008, first as a Road Safety & Traffic inspector, then as a Road Maintenance Supervisor and from 2013 as a Road Safety & Traffic Manager. He is also a consultant in the field of technical-forensic reconstructions of collisions and road accidents and a qualified Road Safety Auditor.

Piotr Chalka
Mr. Chalka has an education in Public administration, specializing in internal security and postgraduate in maintenance of public roads. He started his professional career in Mazovian regional administration for roads in Warsaw in 2008. He joined the General Directorate for National Roads and Motorways in 2014 and has since then worked there in crisis management and defensive preparations. From 2017 on he is currently acting as the head of Division for crisis management and defensive preparations.

Uroš Brumec
Mr. Brumec is currently employed at Slovenian infrastructure Agency and is working primarily in the field of road safety (mostly from the infrastructure point of view) and roads & traffic management. He especially endeavors for the implementation of latest solutions from the “human factor” point of view in road safety. He represents Slovenian infrastructure agency in international associations of WRA-PIARC and CEDR. He has more than 10 years of operational experiences in traffic management, ensuring smooth flow of traffic and logistic procedures. He regularly updates his knowledge through various domestic and foreign seminars and successfully implements it in everyday practice.

Luis Azcue Rodríguez
Mr. Rodríguez is a civil engineer. He has developed his career in the Ministry of Public Works, where he currently holds the position of Service Chief of the Subdirectorate General for Operation and Maintenance. In his professional career he has focused mainly on winter road service and today he controls the management system of winter road service information and carries out monitoring and annual analysis of the works performed. He is an active member of both WRA-PIARC and CEDR associations. For more than 15 years he has also participated as technical director, speaker and teacher in various national and international congresses and training courses, organized by the Spanish Association of Companies for Conservation and Operation of Infrastructures (ACEX) and th Technical Association of Roads (ATC).

6. APPENDIX III (presentations)
Presentation Bine Pengal

Users' needs at the heart of winter service

Introduction to the workshop

- Background
- Intention of the workshop
- Wide variety of topics
- Workshop composition
- Proposed agenda
- Questions for discussion

Background

- Idea based on a successful workshop in Warsaw on April 2016 (MDSS, continuation of a cooperation with WRA-PIARC)
- CEDR working group 3.4 Winter service (CEDR Action plan 2017-2019)
- Participating countries: Slovenia (leader), Hungary, Germany, Austria, Italy, Netherlands, Poland, Finland and Spain
- CEDR Governing Board assigned WG 3.4 to liaise again with WRA-PIARC experts and decide on a content for a common workshop

Intention of the workshop

- Exchange of best practice in addressing users' needs in winter conditions
- Providing examples and solutions for road infrastructure owners and managers in their interaction with different categories of road users
- Ensuring added value by collaboration with WRA-PIARC experts
- Encouraging other CEDR working groups and PIARC technical committees and task forces to enhance the cooperation between the two associations

Wide variety of topics

- Contents divided into three main categories:
  - Interaction with road managers (MDSS and others)
  - Operational issues of different types of road users
  - Standards in winter service
- Topics to be addressed at the workshop:
  - Multimodality in winter time (concerns need to plan ahead): how the needs to be交通安全 requirements when services are an issue
  - Truck drivers as a special category of road users (how needs and behavior in winter time, conditions of snow)
  - Maintenance of bicycle lanes in bad weather conditions
  - Running a successful PR campaign in winter time?
  - Measuring the satisfaction of road users in winter time (e.g. how are they perceived)
  - How is the winter time plan in other countries?
Presentation Didier Giloppe
Users' needs at the heart of winter service
Users' needs at the heart of winter service
Thank you for your attention!
**New Developments concerning Winter Maintenance on Bicycle Lanes in Germany**

- **Overview**
  - Introduction: Bicycle use in Germany
  - Legal duty of Winter Maintenance on Bicycle Lanes
  - Actual situation of Winter Maintenance
  - Traffic characteristics in Winter Time
  - New Techniques and Experiences
  - Outlook

**Introduction: Bicycle Use in Germany**

- The use of bicycles has increased strongly in Germany in the last years
- Especially in towns and villages
- Per normal working day traffic
- Like for working, shopping, school and university
- At the same time bicycle lane networks in the towns have been expanded and connected
- New developments are special rural speed bicycle lanes for connecting the urban and rural areas
- E-Bikes give an additional boost to the use of bicycles
- In former times bicycles mostly were used in summer times, but nowadays they are more and more used the whole year
- Bicycle traffic volumes have increased in winter time strongly
- Users expect a good winter maintenance in connected networks

**Legal Duty of Winter Maintenance**

- In Germany there exist legal regulations about duty of winter maintenance
- The situation on bicycle lanes is as following:
  - If the lane is snow-covered, then cycling will be no more possible
  - There is a legal duty to remove the snow
  - A legal duty is given on lanes with important traffic (main connections) and on dangerous sections (like crossings or steep grades)
  - The spreading material is not regulated but it has to be effective to better the passenent condition
- Responsible for the Winter Maintenance are the cities and villages for the bicycle lanes in their area

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**Users’ needs at the heart of winter service**
Users' needs at the heart of winter service
The results were very positive:

- Better surface conditions
- Good feedback from the users
- Save of salt consumption: 47% compared with dry salt, 46% compared with FS 33

This results and experiences are also made in several other cities, and it will lead to a new strategy of winter maintenance on bicycle lanes in whole Germany.
Presentation Enzo Giletta

Winter Road Maintenance 4.0
How technology improves safety and efficiency of drivers
Enzo Giletta
Gdansk XVII Planc Congress 2018

Actual situation in WRM
- This is the 15th International Winter Road Congress
- 50 years of research in Winter Road Maintenance (WRM)
- Many countries and specialists have spent energy and resources to test new products and to define new processes to reduce the level of service by reducing the economical and environmental impact
- In Europe there are groups of specialists working since 16 years to define standards to improve the performance of the WRM equipment
- The result is that today a well-defined what to do in any condition, that is:
  - Exact quantity of salt or brine to be spread with any kind of vehicle or weather condition
  - The mixture of salt and brine related to the minor or to the road surface
  - The spreading width has to be served with any road section, not to cause product
  - The plough pressure has to be adjusted depending on snow or bridges, roads
  - The layer of snow has to be changed according to the infrastructure on the side

Example of Italian motorway on Apennine

Driver safety rules
- Reminder to use the mobile phone but allowed the use of the remote control for every moves on the joy stick

ASSIST project developed according to the ESA tender

OVERALL SYSTEM ARCHITECTURE

Users’ needs at the heart of winter service
Users' needs at the heart of winter service
Working Group: COMITATO TECNICO NAZIONALE B2: WINTER SERVICE

ENG. ROBERTO MASTRANGELO, ANAS S. P.A.
ENG. CARLO COSTA, AUTOSTRADA DEL BRENNERO S.P.A.
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GEOC. IGINO IAI, STRADA DEI PARCHI S.P.A.
DR. DAMIANO PICA, SERVIZIO POLIZIA STRADALE
ENG. DOMENICO ZAGARI, TECHNOLOGY MANAGER

WINTER ROAD MAINTENANCE 4.0
How is this achieved?

Roads are no longer just a physical structure made of steel, cement and asphalt but become a "technological infrastructure" that interacts with vehicles and therefore with the drivers using it.

The work carried out by the B2 Technical Committee has focused on the development of technologies relating to road infrastructure as well as vehicles and the equipment used to maintain this infrastructure, especially during the winter.

a. Smart Road

b. The vehicles

Users’ needs at the heart of winter service
a. What is a Smart Road?

The "smart road" is a new approach to roads, which sees there is a "technological infrastructure" that connects drivers and roads, providing access to an innovative range of services.

- Road data: functions - Information density by use
- SDI on-board smartphone
- Intelligent highway scenic management
- Real-time information
- Increasing of service level
- Monitoring of traffic of Things

Wi-Fi in motion: The infrastructure features a number of access points distributed across the network in order to ensure efficient connectivity with mobile devices on-board vehicles moving at a speed of 1.30 km/h.

Wi-Fi Vehicle To Infrastructure (DSRC - ETSI ITS-5): Specifically designed devices enable the exchange of information between vehicles and road infrastructure: OBU (On Board Unit), a device for on-board Wi-Fi connectivity in vehicles and RSU (Road Side Unit), a device for Wi-Fi connectivity across the entire road infrastructure.

b. Why professional vehicles should interact with the Smart Road?

In this context, the vehicles and equipment used for Winter Road Maintenance must also feature an innovative management system and be able to interact with road infrastructure directly and in real time, exchanging important information regarding road conditions, that may be useful to other WRM vehicles and all end users.

Professional services and equipment have a strongly need of know what’s going on along the road.

Users' needs at the heart of winter service
Users' needs at the heart of winter service
Users’ needs at the heart of winter service

ASSIST TOWARD SMART ROAD

On board the vehicle, a microprocessor-based control system is able to use a map engine as a navigator and enables positioning of the vehicle via GPS. During the creation of a digital map, satellite earth observation allows users to view potential obstacles and dangerous points.

ASSIST TOWARD SMART ROAD

In the case of viaducts carrying roads, the presence of expansion joints poses a real problem during snowfall as the shock wave released by the snow plough to malfunction and the driver cannot do anything because the joints are hidden under the snow.

The joints also require heavy maintenance during springtime. ASSIST knows where the joints are positioned, automatically lifting the plough when required, maintaining contact without applying too much pressure, avoiding dangerous shocks and protecting both the plough and the joints.

ASSIST TOWARD SMART ROAD

On board the vehicle, a microprocessor-based control system is able to use a map engine as a navigator and enables positioning of the vehicle via GPS. During the creation of a digital map, satellite earth observation allows users to view potential obstacles and dangerous points.

In addition, the sensor system installed along the “smart road” and the weather forecast system, exchanges further real-time information with the vehicle. This information is essential to allow better management of operations and ensure traffic safety. The ASSIST project fits perfectly into the smart road project of intelligent management of unrambling and represents a significant step forward in improving the quality of work carried out by road maintenance personnel. The ASSIST project can be viewed at the Roche Municipal stand.
Presentation Ibolya Bali

Road Users’ expectations and opinions: a survey concerning winter road service in Hungary

22 February 2018; GDANSK

Ibolya Bali
Traffic Information Services, road of Department Hungarian Public Road Nonprofit Ltd Co.

Information flow

Road network managed by the Hungarian Public Road Co.

Dispatch system

What do we expect from road users?

In case of extreme weather conditions please ask yourself the following questions:

- Is the journey absolutely necessary?
- Have I taken into consideration the national weather forecasts?
- Have I taken into consideration the national and local traffic information?
- Is my vehicle fully tanked?
- Can I count on enough time for the journey?
- Do I carry enough warm drink, food, warm clothing, boots, blade, traction cable, snow chain?

Instructions to follow on the way:

- Do not hinder the winter service vehicles when performing winter road maintenance works (and do not even get close to them)
- In case of trouble, do not leave your vehicle, remain at the scene and wait until help arrives

What do road users expect from road operators?
**Users’ needs at the heart of winter service**

### Driving - what kind of roads do you usually use under winter road conditions?
- Major road
- Motorway, expressway
- Minor roads
- Roads within municipalities
- I prefer to avoid driving during winter

### How important do you think it is to inform public road users in the following cases?
- When strong, violent winds are expected (62%)
- When driving is hindered by heavy snowfall (30%)
- Due to weak, wet road surface or ice (52%)
- When road sections are expected to be closed (62%)
- When snow removal, anti-ice maintenance or winter service tasks are being performed on the road (52%)

### How useful do you find the following information platforms?
- Homepage (www.cinfom.eu) (62% and 28%)
- Other online platforms, apps (97% and 37%)
- Radio, television (52% and 56%)
- Digital information boards (VMS) on the roads (70% and 24%)
- Real-time data from navigation applications (e.g., Waze) (78% and 18%)
- Telephone customer service (automated informative text in the menu system) (32% and 36%)

### To what extent do you agree with the following statements? - Evaluation of winter road operation duties

As the bar charts show, the proportion of answers, I fully agree and I mostly agree is the following:
- Minor roads with low traffic volume only require intervention on critical sections (essentially emergency) (10% and 28%)
- The layout of roads subject to anti-ice measures and snow removal shall be established in line with traffic characteristics and the roads’ importance on the road network (64% and 28%)
- In certain cases (e.g., repairs, pothole maintenance on roads with high traffic volume), it is justifiable to prescribe extraordinary night work (75% and 10%)
- In case of heavy snowfall, it is necessary to ask road users to postpone their journeys, if possible (52% and 14%)

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**Breakdown of survey respondents by generations**
- 1925-1945: old generation (5.6%)
- 1946-1960: Baby boom (9.6%)
- 1960-1979: X generation (43.2%)
- 1980-1999: Y generation (47.9%)
- 2000+: Z generation (4.5%)

**Breakdown of survey respondents by educational attainment**
- Elementary or lower
- Complete secondary education
- University degree or equivalent
- Postgraduate degree or equivalent

How important do you think the following activities are during the winter service period?

- 24/7 on-duty service at each maintenance center: (69% and 20%)
- Placement of snow barriers before the winter service period: (placement of snow guard grids, tree planting): (74% and 33%)
- Collect and systemize information on weather and road condition and subsequent measures: (82% and 14%)
- Regular preventive maintenance: (before incoming snowfall, preventive road setting in case of risk of icy roads: (77% and 13%)
- Impose weight restrictions or road closure due to winter weather conditions: (48% and 51%)

Conclusions, results

Based on the results of the survey, service development is recommended in the following areas in Hungary:

- Develop a mobile application similar to the navigation tool
- VMTs: publication of speed and meteorological data in combination with the traffic control
- Development of information published on the website: new map layers, audio file
- Establish news operations, make the information available to a wider public
- For radio channels send automatic message news
- ISS development: involving replaceable menu items
- Amendments to laws relating to road operations and interventions
- Consider night work, concept development

Thank you for your attention!
Presentation Andrzej Kabzinski and Piotr Chalka

Winter maintenance of national roads in Poland – effective methods and forms of communication

Piotr Chalka
Andrzej Kabzinski

Generalna Dyrekcja
Dróg Krajowych i Autostrad (GDDKiA)
Oddział w Warszawie

General Directorate
for National Roads and Motorways
Warsaw Branch

Agenda

• Winter maintenance of roads in Poland
• Communication in winter maintenance of roads
• Methods and forms of communication in GDDKiA

Users’ needs at the heart of winter service
Users’ needs at the heart of winter service
Users’ needs at the heart of winter service
Users’ needs at the heart of winter service

**Why communication is important?**
- Comfort of traveling

**What correct communication consists of?**
- Clear message

**Communication in GDDKiA**
- Punkt Informacji Drogowej (PID)
- Road Information Point (RIP)

**What correct communication consists of?**
- Good information
Users' needs at the heart of winter service
Users’ needs at the heart of winter service
Users' needs at the heart of winter service
Presentation Uroš Brumec

Winter Maintenance

In the Heart of Europe

Organizational structure of Slovenian main road authorities

Road and Railway Infrastructure

Users’ needs at the heart of winter service
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**TO CONSIDER ALL 4 PERSPECTIVES IN A SINGLE CRITERION**

- As a basis, integrate the 4 perspectives, in a way that there is a correlation between:
  - Level of trafficability.
  - Physical conditions of the road in order to achieve that level.
  - Time needed to achieve that condition.
  - Schedule to be considered as the traffic restrictions are compatible with the type of road considered.

**COUNTRIES WITH ADVERSE CLIMATOLOGY**

**CONSIDER A HIGHER NUMBER OF PERSPECTIVES**

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**SPANISH ROADWAY NETWORK (2018)**

<table>
<thead>
<tr>
<th>National Network Length</th>
<th>Autonoma</th>
<th>Regional</th>
<th>Municipal &amp; Local Network Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>135,400</td>
<td>56,100</td>
<td>32,200</td>
<td>45,900</td>
</tr>
</tbody>
</table>

- In Spain different standards of service are considered depending on the public body in charge of the roads.
- Only in the 11.3% of the total Spanish road network length, managed only by the State, standards of service are considered above are going to explain, with 3 different levels.
- For instance, in the network of Local Bodies where standards of service are adjusted depending on the category of the road and their strategic importance.

**ROAD NETWORK MANAGED BY THE STATE**

<table>
<thead>
<tr>
<th>Total Network Length</th>
<th>High capacity</th>
<th>Sub-motorways</th>
<th>Sub-motorways, highways, and multi-lane roads</th>
<th>Normal to low capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>33,800 km</td>
<td>11,500 km</td>
<td>2,500 km</td>
<td>8,400 km</td>
<td>14,530 km</td>
</tr>
</tbody>
</table>

- "The descriptors considered are:
  - Disruption in heavy vehicles traffic flow", as a means to avoid the crossing of these vehicles in the road.
  - "Use of snow chains for light vehicles" to increase the traction of vehicles in conditions of less power due to the presence of snow on the road.
  - "Total disruption in the traffic flow of vehicles", in cases where the large amount of snow does not allow the movement of any vehicle.
  - "Road blocking", traffic flow is not possible due to the presence of vehicles on the road, usually crossed heavy vehicles and trapped groups of light vehicles.

**NOTA:** The presence of ice is not admitted for any of the Standards of Service.
Users’ needs at the heart of winter service
4. OTHER CONSIDERATIONS

The procedures are quite similar in Europe. Information is organized in different phases:

- Define the winter season in countries with more extreme climates, informative campaigns/interventions.
- Informing in adverse conditions
- Vehicle equipment (tires, chains, etc.)
- Winter maintenance operators

- During the winter time, information is given about:
  - Weather forecast (telephone radio, TV, internet, etc.)
  - Road conditions (information panel and future-measured means)
  - Trafficability conditions (law enforcement agents and units before-mentioned means)
  - Restrictions or trafficability

6. CONCLUSIONS

Most countries consider the same parameters of winter serviceability, however, their approach and development is varied.

The particular characteristics of each country (climatology, orography, environment, etc.) prevent the existence of uniformity in the parameters of winter road management.

Great disparity in standards of service both in national and international spheres

WORK IS BEING CARRIED OUT IN THE FOLLOWING ASPECTS

- Studies in relation to scaling agents for environmental management
- Improve procedures and criteria in winter serviceability based on the experiences of different countries
- Studies on different treatment techniques according to the wearing course (concrete, open bituminous mixtures, etc.)
- Make progress in the technology apps of traffic management in sensitive areas of winter serviceability, as key part to ease the treatment management of sections affected by the presence of tunnels and, generally, to avoid prolonged restrictive measures on trafficability

PROPOSAL

European Directive on minimum winter mobility requirements in the trans-European road network???
Ref: CEDR report TR 2018-01 - Workshop on winter service 2018