Today's Technology for Tomorrow's Winter Weather Operations

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Professional snow fighters today know very well that the days of jumping in the snowplow cab, lowering the blade, starting up the salt spreader and driving off to run a mindlessly pre-determined route are a thing of the past. Supervisors and maintenance managers also know, the days of turning on the local news and scanning the internet's weather websites to figure out when the storm is going to start and how "bad" it's going to be are no longer effective in making decisions about winter maintenance operations. Today professional snow fighters are keen to the overall objective of balancing three important things: keeping roads safe and passable, reducing maintenance costs, and being mindful of the impact winter operations will have on the environment. Today's technologies have given winter weather maintenance professionals more information and decision support tools than ever before, in many ways fundamentally changing our operations. The challenge we face today is keeping informed about the latest technologies, implementing those solutions where effective, and using the technology to continuously adapt operations to improve the efficiencies, effectiveness and reduce the impact on the environment.

Road weather technology has continuously evolved. Beginning with the very first RWIS stations deployed more than 40 years ago, to today's laser-based instruments, mobile observation solutions, and pavement analytics that can provide highly accurate pinpoint data about almost every inch of the roadways. The challenge today is two-fold: how do we manage this tremendous amount of data and transform it into useful information to achieve the previously mentioned objectives of winter maintenance operations. And second, how do we continue to stay aware of and deploy current technologies and the information they provide to adapt and adjust best practices and continuously evolve and improve our winter weather maintenance programs.

Many training programs and education sources have already been developed to provide operators with best practices and knowledge on how to effectively incorporate this information into their real time operations. Below are a few key sources for this information:

https://professionalsnowfightersassociation.org/training/information/
https://ops.fhwa.dot.gov/weather/mitigating_impacts/best_practices.htm
https://clearroads.org/completed-research/
https://intrans.iastate.edu/app/uploads/2018/03/multi-purpose_ESS_ITS_sites_w_cvr.pdf
https://www.apwa.net/MyApwa/Apwa_Public/Reporter-By-Topic.aspx?tp=winter%20maintenance

Occasionally these sites and tutorials can become dated and not necessarily contain the most current information on technologies and best practices. So, in addition to using these training sites it's also important to be actively engaged in the winter weather community by participating in the many conferences and technology exchanges that take place during the year. Below is a list of a few of the most common conferences where this kind of exchange of information occurs:

https://www.fhwa.dot.gov/exit.cfm?link=https://www.eventbrite.com/e/2019-road-weather-stakeholder-meeting-tickets-62171569839
https://www.westernsnowandice.com/
https://www.apwa.net/SNOW/Home/SNOW/Home.aspx
https://maintenance.transportation.org/

These conferences and meetings are excellent forums for the exchange of ideas and experience, as well as an opportunity to learn about emerging technologies, and best practices. Taking time to meet with peers and other stakeholders in this environment also promotes stronger relationships in the community and a greater commitment to incorporating and utilizing the latest technologies to improve performance within one's own organization.

As technologies and winter weather data analytics continue to advance over time, winter maintenance strategies and decision support tools will continue to improve our ability to achieve our goals of effectiveness, efficiency, and the reduction of impact on the environment. But they are only effective if the snow fighting professionals are aware of this new technology and continue to be trained on how to utilize the information and apply it to their maintenance strategies and methods. Training and knowledge base sources will need to be continually updated to keep operators informed. The exchange of ideas, strategies, and best practices will need to continue to take place to strengthen the knowledge base of the community and promote the development and use of technologies. In order to accomplish this, organizations will need to allocate resources, time, and funding to provide access to these tools and resources for its members. The easiest way to do this is to include them as part of the winter maintenance program budget and planning. Winter maintenance program directors should consider allocating a certain amount of their budget for technology, education, and

collaboration with the professional snow fighting community. The rapid advancement of technology and information requires us to ensure we provide for these sources of edification. As we continue to grow the collective knowledge base on how to incorporate and utilize today's technology and information we vastly improve our ability to meet our overall objective of continuing to improve our ability to achieve our overall objective of efficiently and effectively keeping our roads clear and safe, while minimizing the impact we have on the environment today and in the future.

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