



www.silnicnikonference.eu

29. ROČNÍK SILNIČNÍ KONFERENCE

Kongresové centrum Praha, 4.-5. října 2022

Mezinárodní zimní silniční kongres Calgary 2022

Ing. Julius Janeba

POŘÁDÁ



VE SPOLUPRÁCI





Technický výbor PIARC 3.2 Zimní údržba

Témata pro Calgary:

1. Extrémní zimní situace v chladných klimatických oblastech
2. Efekt klimatických změn na zimní údržbu
3. Silniční meteorologie
4. Nové technologie a metody v zimní údržbě
5. Management zimní údržby
6. Komunikace s uživateli silnic a autonomní vozidla v zimě
7. Zimní údržba v městských aglomeracích



Calgary 2022

Počet přijatých abstraktů (příspěvků)

Celkem bylo přijato 371 příspěvků, z toho 199 se týkalo zimní údržby a zbývajících témat „odolnosti“ pozemních komunikací.

Země	Pořadí	Počet
Canada	1.	45
Japan	2.	39
Spain	3.	32
France	4.	26
United States	5.	23
Germany	5.	23
United Kingdom	7.	20
Sweden	8.	14
Italy	8.	14
Austria	10.	10
Finland	10.	10
China	10.	10
Czech Republic	19.	5
others		150
total		371

Region	Počet
Europe	195
Asia	76
America	92
Africa	8
total	371



FEBRUARY 7-11 | 7-11 FÉVRIER | 7-11 DE FEBRERO

VIRTUAL | VIRTUEL

XVI WORLD WINTER SERVICE AND ROAD RESILIENCE CONGRESS
XVI^e CONGRÈS MONDIAL DE LA VIABILITÉ HIVERNALE ET DE LA RÉSILIENCE ROUTIÈRE
XVI CONGRESO MUNDIAL DE VIALIDAD INVERNAL Y RESILIENCIA DE LA CARRETERA

www.piarc-calgary2022.org





XVI WORLD ROAD RESILIENCE FORUM

Adapting to a Changing World

February 7-11, 2022 - Calgary

Login

WELCOME!

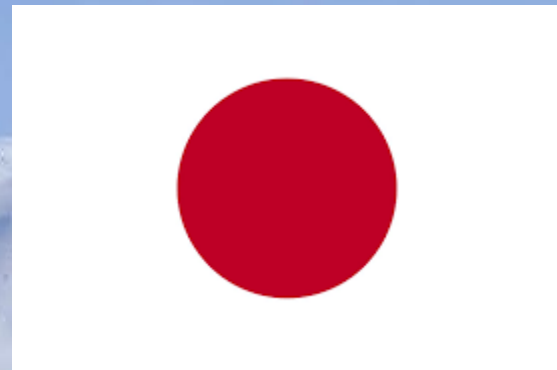
Canada and the City of Calgary are proud to host this virtual international forum where decision-makers, technical experts, administrators, academics, and equipment operators, manufacturers and engineers will share their knowledge and best practices in winter service and road resilience to increase the world-wide expertise in these areas.

LOGIN

Email:

Cancel Login





1. INTRODUCTION

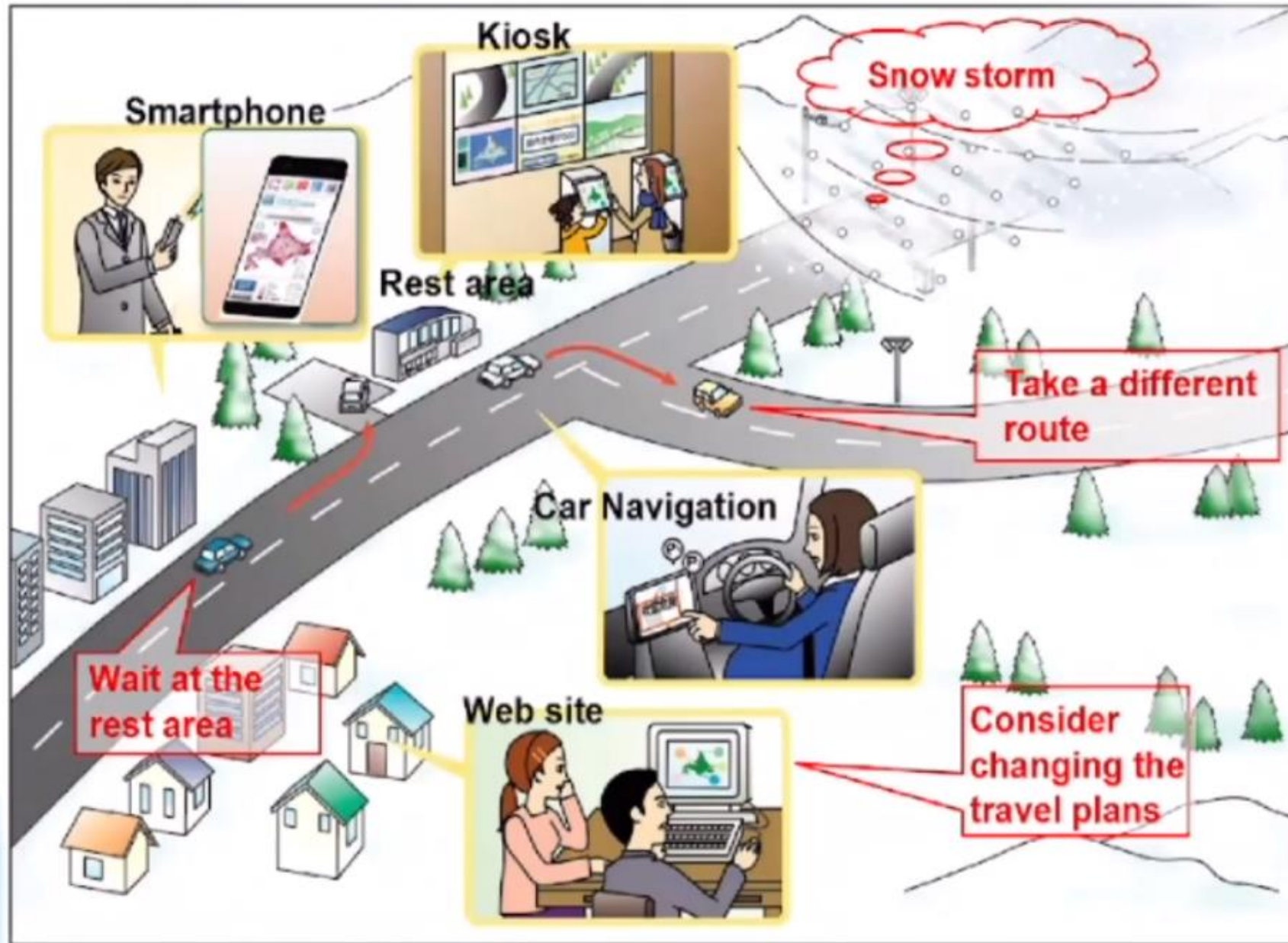
- Hokkaido is the northernmost island of Japan.
- In Hokkaido, snowstorm-induced poor visibility and snow drifts sometimes cause multiple-vehicle collisions and vehicles getting stuck on roads.



Photo by Hokkaido Regional Development Bureau



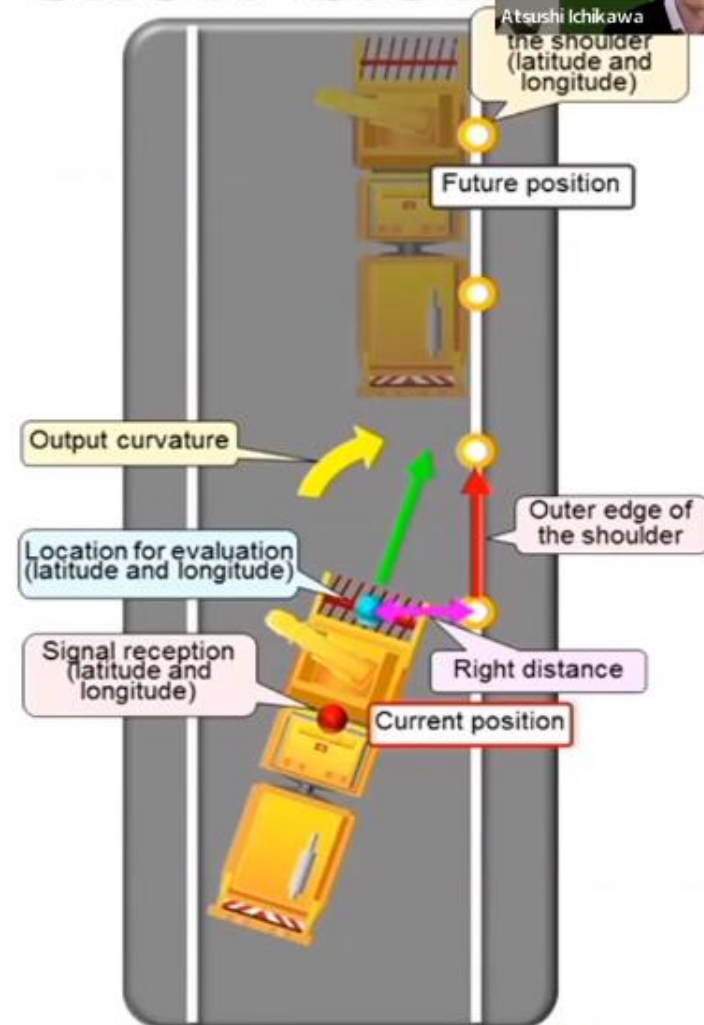
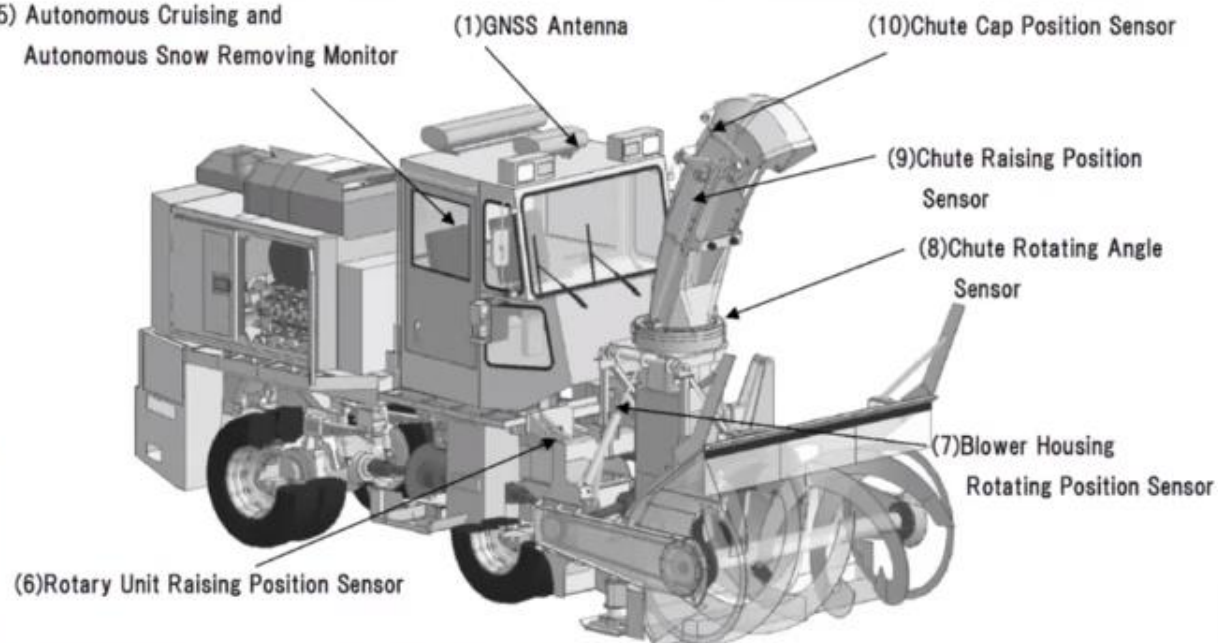
Information helps us to make a better decision



3. Technical features of the snow blow

Vehicle control system

- (2) Guidance Device
- (3) Steering Angle Controller
- (4) Autonomous Cruising and
Autonomous Snow Removing Controller
- (5) Autonomous Cruising and
Autonomous Snow Removing Monitor

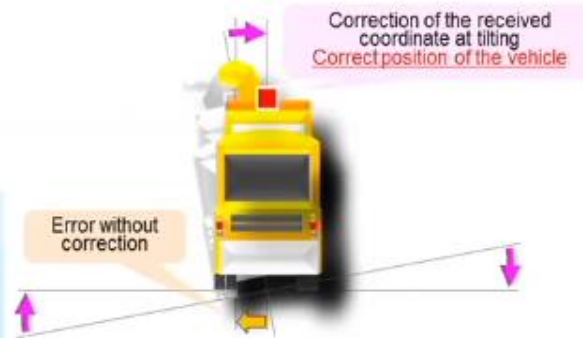
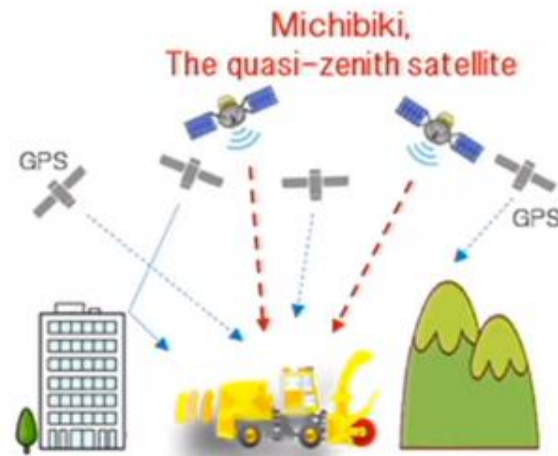


3. Technical features of the snow blow

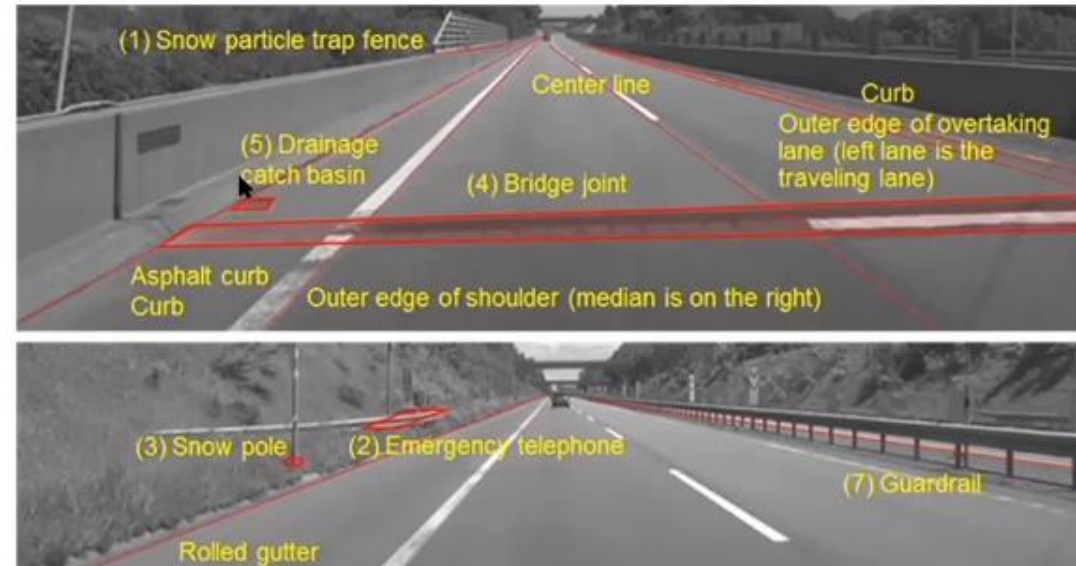


Two indispensable factors to obtain the exact position on expressways

① The quasi-zenith satellite “Michibiki”



② The high-precision positioning map





SUBSCRIBE



6:26 / 13:40





Connected vehicle data - Innovating winter maintenance

Björn Zachrisson

Business and Product Strategy Manager

bjorn.zachrisson@niradynamics.se

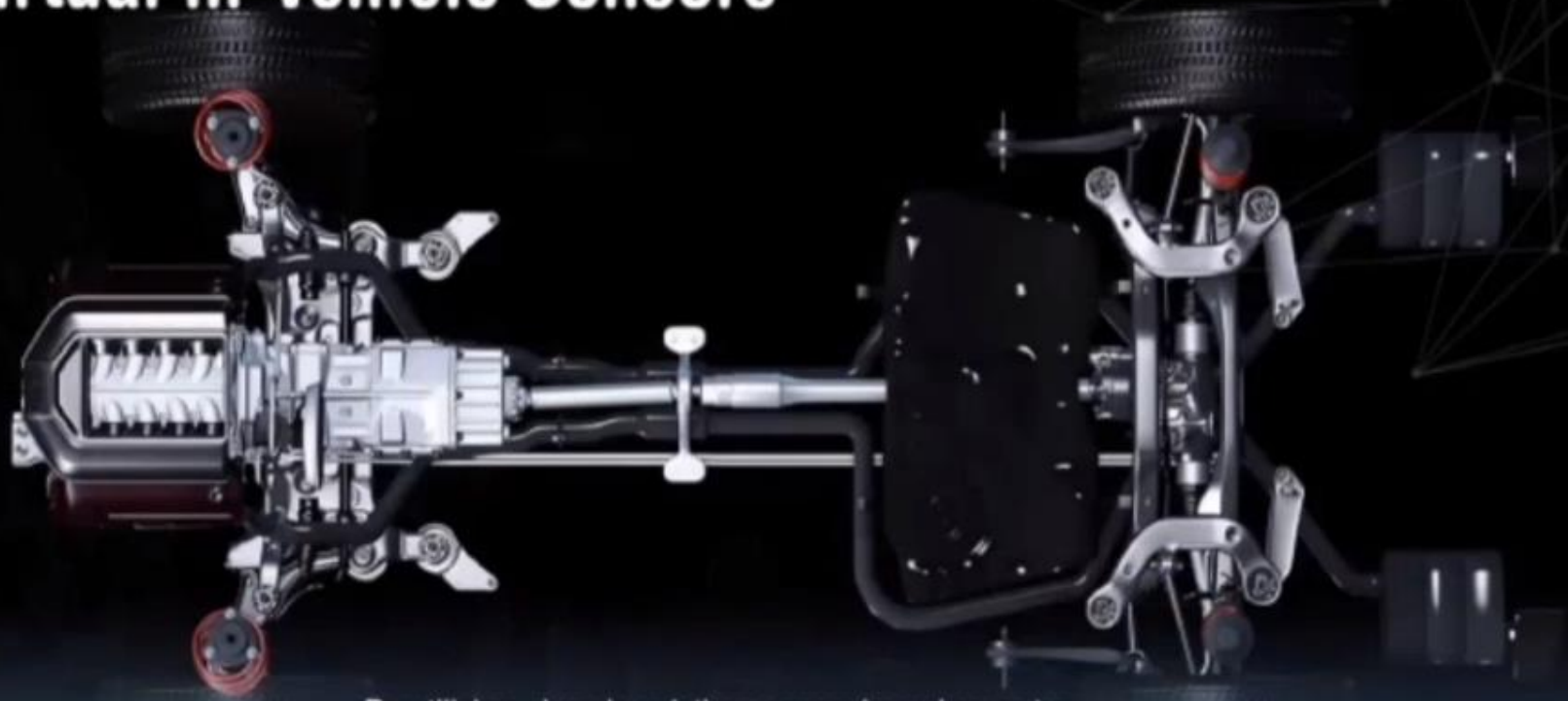
VIRTUAL | VIRTUELL

XVI WORLD WINTER SERVICE AND ROAD RESILIENCE CONGRESS
XVI^e CONGRÈS MONDIAL DE LA VIABILITÉ HIVERNALE ET DE LA RÉSILIENCE ROUTIÈRE
XVI CONGRESO MUNDIAL DE VIALIDAD INVERNAL Y RESILIENCIA DE LA CARRETERA



Björn Zachrisson

Virtual in-vehicle Sensors



By utilizing already existing sensor (accelerometer and ABS-sensor), virtual NIRA sensors are created in the vehicle using NIRA software.



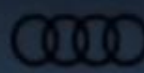
Björn Zachrisson

70M

More than 70 000 000 vehicles
world-wide are currently
equipped with NIRA SW

7 000

NIRA has tested more than
7 000 tire models over the
years



NIRA
DYNAMICS



Björn Zachrisson

RSI Insights



Friction
Detected: Slippery road
Reporting vehicles: 9
Time window: 0.5h



Roughness (IRI)
Mean IRI: 2.7
Time window: 30 days
Yearly degradation: 0.5
Reporting vehicles: 12000



Environment data
Surface temp: -0.5 degrees
Ambient temp: +4 degrees
Road friction: 0.35
Wetness: very wet

Potholes
Reporting vehicles: 390
Time window: 1day



Björn Zachrisson

NIRA
DYNAMICS

Live view: Slippery roads due to massive snowfall

Autobahn A2



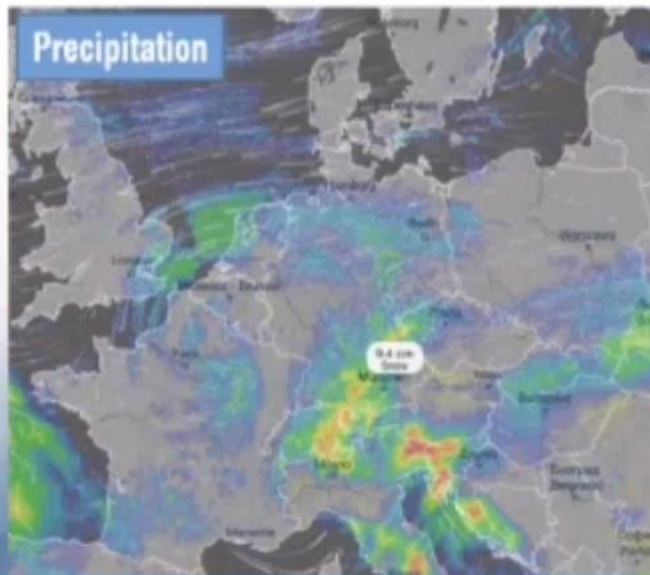
2021-02-07 19:00

Snowfall moves south and decreases in intensity

Temperature



Precipitation



Friction



Björn Zachrisson



Enzo Giletta

Case Study in Torino city



Turin has a plain city road network with an ancient and cobbled center, a river area with high humidity and a hilly area that reaches 715 meters: an urban area where there are different situations to manage. This is the reason why Turin has been chosen for this experimentation.

These inhomogeneities require constant updating of the working parameters, which require not only the attention of the driver, but also knowledge of the road conditions.

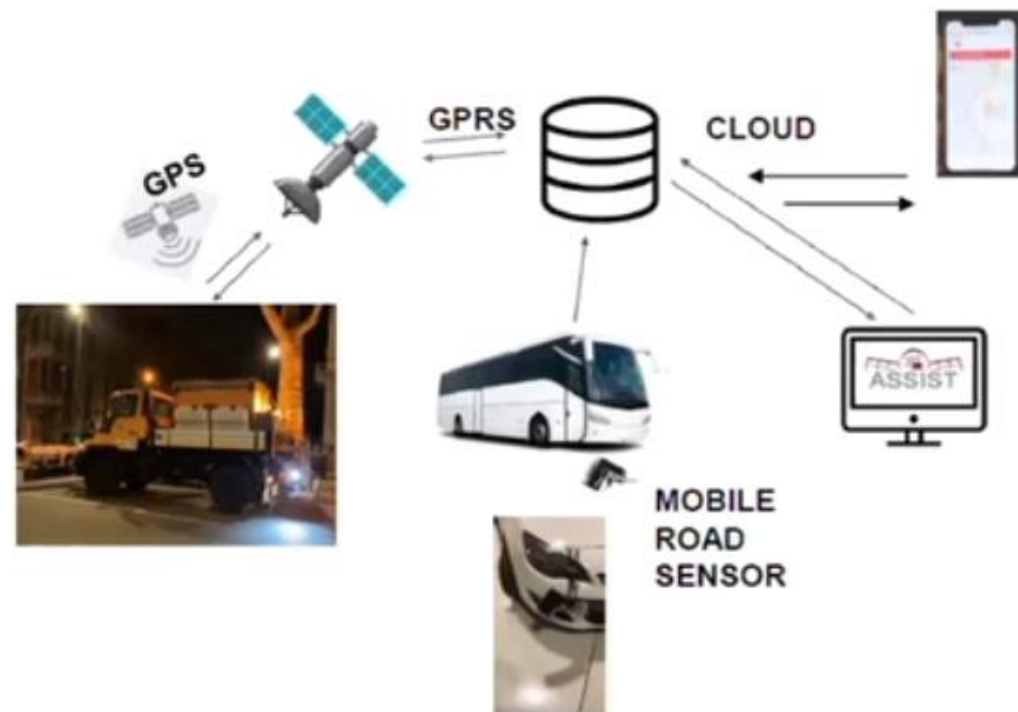
As well as the operators driving the winter vehicles, point out the danger in the hill: fog, poor visibility, animals, blind curves, narrow roads, poor grip, ...



Equipment and technology used

The project required setting up a vehicle used for cleaning service equipped with an intelligent salt spreader and connected to the Cloud, as well as a snowplow equipped with the patented MBS system, for injecting the brine during snow removal.

- A city bus was set up, with a Vaisala mobile sensor capable of detecting road conditions in real time and transmitting them to the Cloud for direct processing of the spreading parameters.
- A KS2500 model spreader mounted on a Unimog U400, setting it up with an Ecosat10 control equipped with real-time connection to the Cloud ASSIST (patent pending).
- A Smart Phone to load spreading trips with working parameters.
- A PC connected with WEB-ASSIST to correct parameters and to control the works status





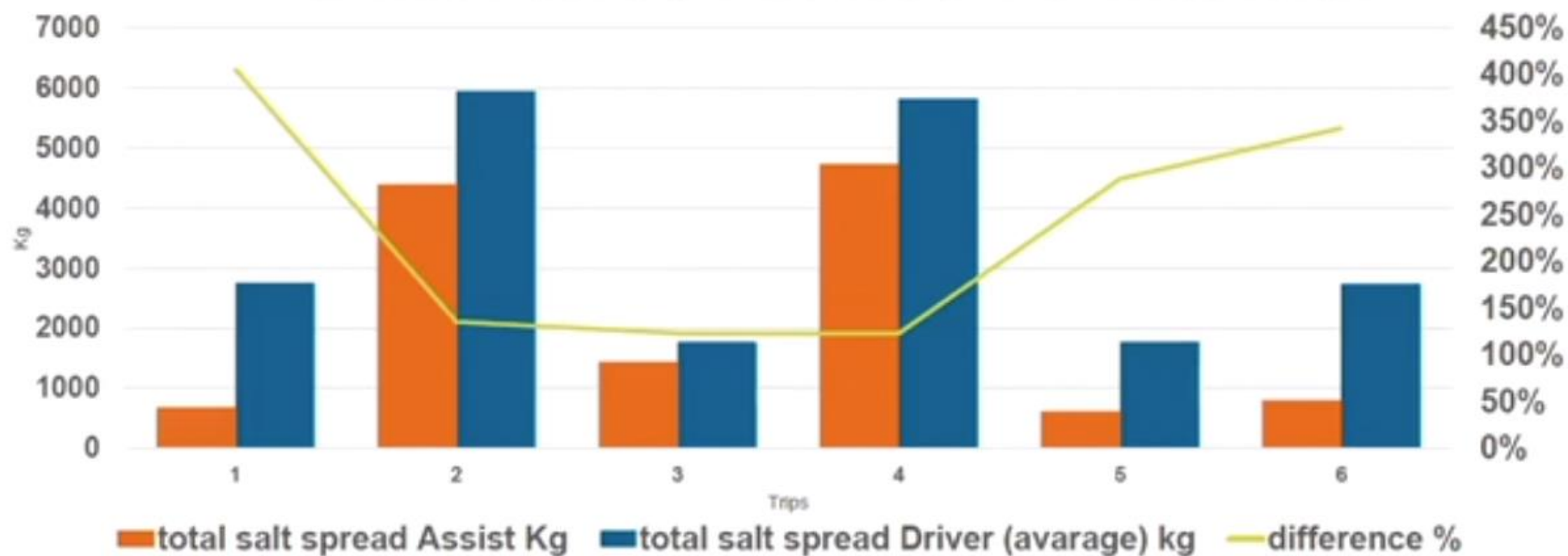
Unlike traditional snowplows that leave a thin layer of compacted snow on the road surface, the combination of the mechanical cutting and

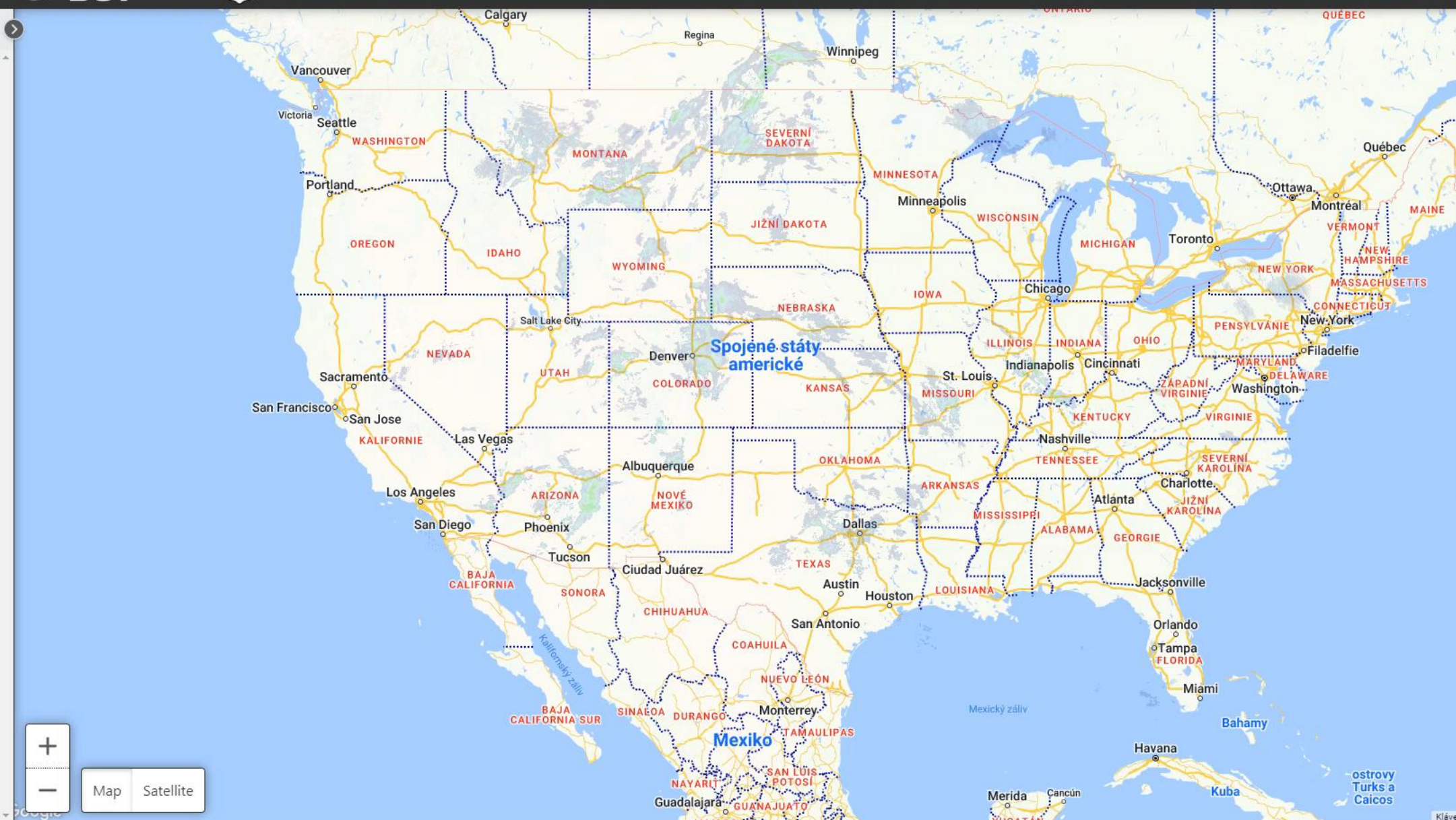


0:25 / 2:03



Difference Assist Vs Manual





Layers Legend

Select: Default / None

- ☐ Unplanned Traffic Events
- ☐ Construction
- ☐ Roadside Cameras
- ☐ Waze Reports
- ☐ Traffic Speeds
- ☐ Message Signs
- ☐ Rest Areas
- ☐ Winter Road Conditions (Iowa)
- ☐ Winter Road Conditions (Regional)
- ☐ Towing Not Recommended
- ☐ Plow Locations
- ☐ Plow Cameras
- ☐ Weather Warnings

☒ Commercial Vehicles

Map controls: Zoom in (+), Zoom out (-), Map, Satellite



FEBRUARY 7-11 | 7-11 FÉVRIER | 7-11 DE FEBRERO

Děkuji za pozornost.

VIRTUAL | VIRTUEL

XVI WORLD WINTER SERVICE AND ROAD RESILIENCE CONGRESS
XVI^e CONGRÈS MONDIAL DE LA VIABILITÉ HIVERNALE ET DE LA RÉSILIENCE ROUTIÈRE
XVI CONGRESO MUNDIAL DE VIALIDAD INVERNAL Y RESILIENCIA DE LA CARRETERA

julius.janeba@strabag.com

www.piarc-calgary2022.org

