Triplesign Variable Message Signs (VMS)

Sustainability & Safety Presentation

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Innovation and ECO Technology

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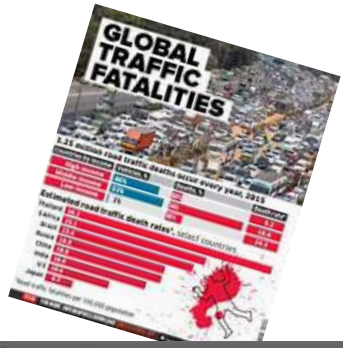
Some facts and figures

World Health Organization reports

- 1.3 million people killed in traffic accidents annually
- Between 20 and 50 million more people injured annually
- Road traffic crashes cost most countries 3% of their GDP
- 70% of all accidents are in urban areas with 1/3 fatal
- 30% of all accidents are in extra urban areas with 2/3 fatal



"Variable Message Signs (VMS) provide real-time information on traffic conditions, making it possible to guide drivers through electronic signs along the road. Relevant literature has proved VMS to be effective, especially for diverting traffic during incidents in the highway or inducing a speed reduction."

The use of VMS increases traffic safety

- Urban areas need efficient traffic measures
- VMS have proven their usefulness and necessity to enhance traffic safety and traffic flow
- VMS signs can reduce information overload
- In many cases LED VMS are used

Example of information overload

But:

- LED VMS are not very sustainable
- The lifetime of LED VMS is short (6-8 years)
- LED VMS are expensive (especially the installation) and need a lot of maintenance
- LED VMS require a power connection or large battery

Example of an unsustainable solution

A Triplesign VMS is the sustainable alternative

- When only a limited number of messages is required
- When there are no cables (yet) for power or communication
- When there is a small budget to take measures
- When the same problems occur repeatedly
- When a varying message must be displayed for a longer period (such as different speed limits, temporary roadblocks, weather warnings, etc.)

Key Features of Triplesign Solution

- Extremely low power consumption
- Solar energy operation or battery only
- Wireless functionality
- Turnkey and IoT readiness
- Easy cable-free installation
- Low investment
- Web-interface or back-end platform control

Autonomous slippery road warning

Key Features of Triplesign Solution

- Exceptionally long service life (>20 years)*
- Minimal yearly maintenance
- Low and easy maintenance
- Easy to integrate with existing Intelligent Traffic Management systems
- Reliability – Always displaying a message
- Uniformity to static signs

- Replacement of active components gives a new sign when the 20 years lifetime is lapsed

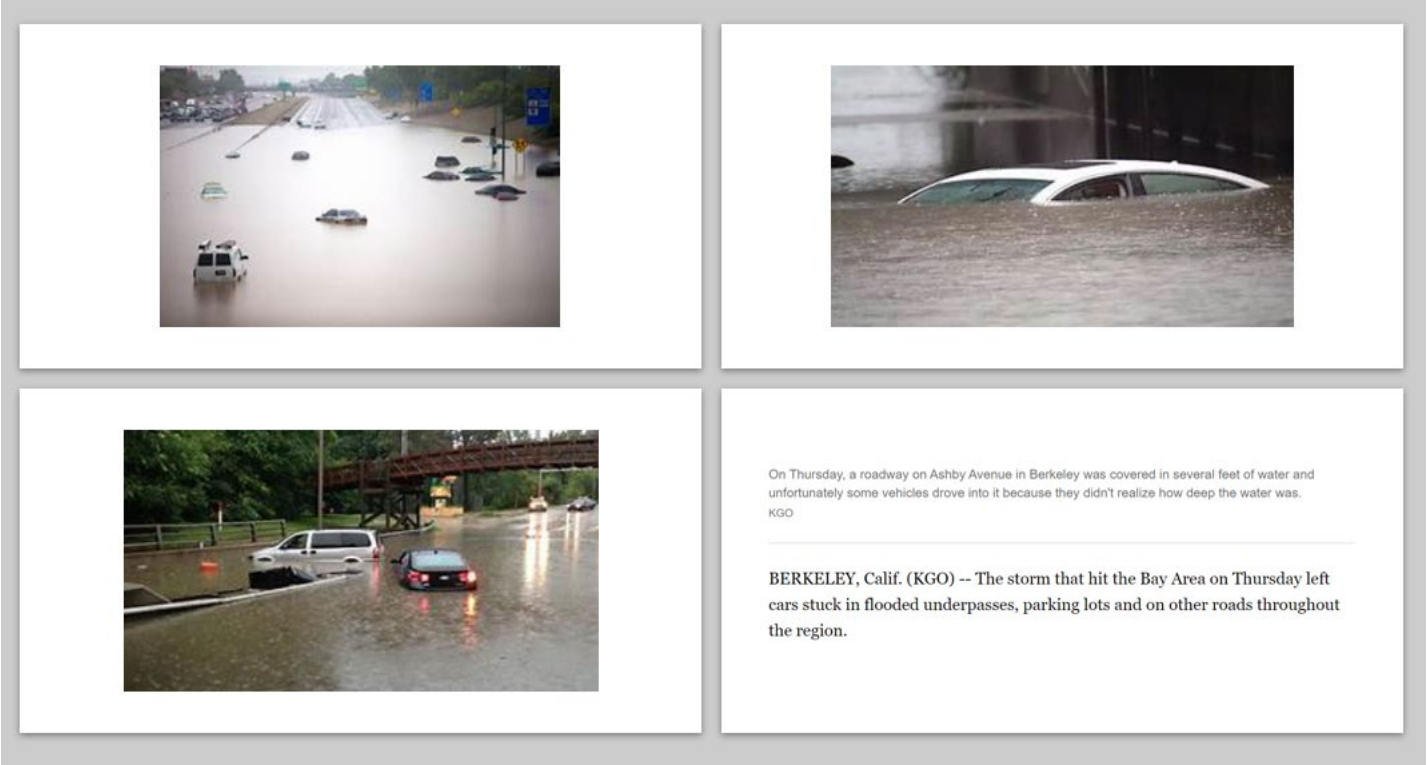
Some real-life examples

- Variable speed zones in Belgium
- Autonomous flood warning system in the UK
- Narrow road passes in Norway
- Flexible use of road sections in Italy

School zones
or
Variable speed zones

New Triplesign system (Portal Multi):

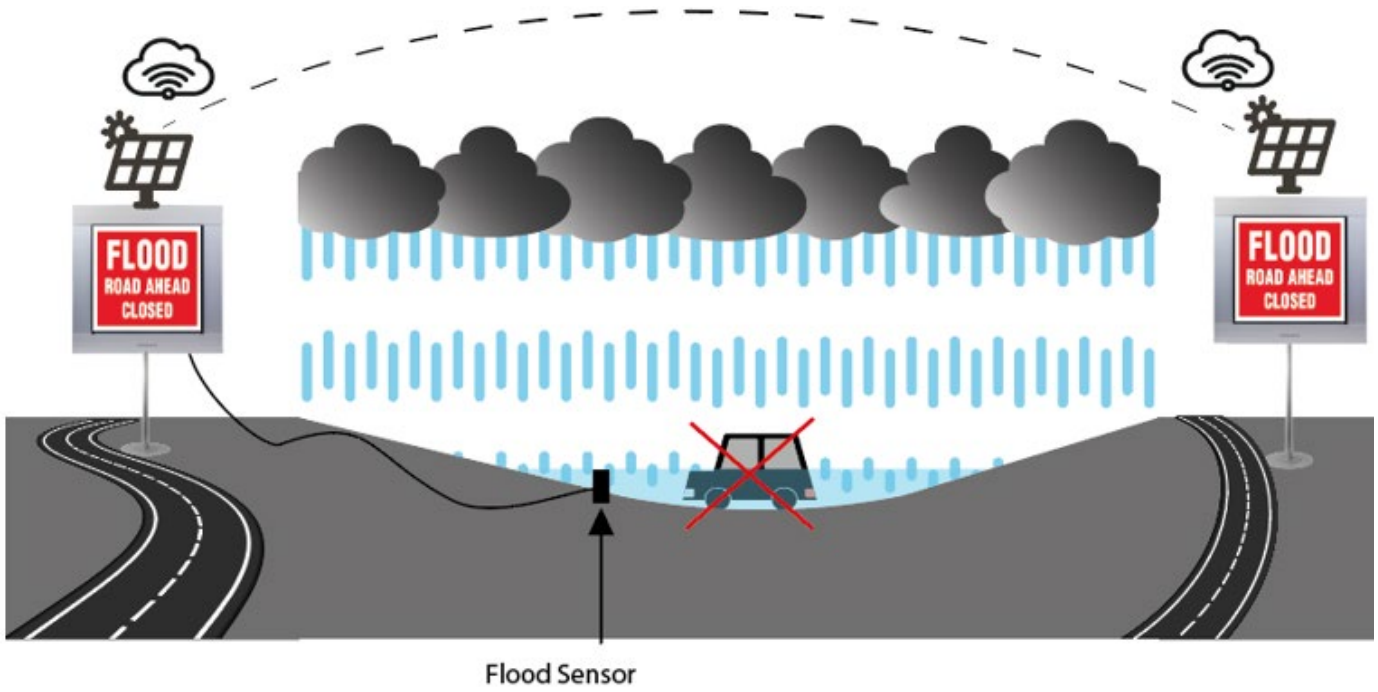
- Grouping and Control of several signs in 1 portal
- Secure communication (MQTT communication, TLS protocol)
- Power consumption – down to 0,14 W/hour
- Sign status and battery level available 24/7
- Log files available 24/7
- Customer controlled portal
- Add and remove users
- Access control
- Calendar functionality (Hourly/Daily/Monthly/Yearly etc..)



On Thursday, a roadway on Ashby Avenue in Berkeley was covered in several feet of water and unfortunately some vehicles drove into it because they didn't realize how deep the water was.
KGO

BERKELEY, Calif. (KGO) -- The storm that hit the Bay Area on Thursday left cars stuck in flooded underpasses, parking lots and on other roads throughout the region.

Flood warning



Ingredients:

- 2 Triplesign VMS
- 1 flood sensor

Communication:

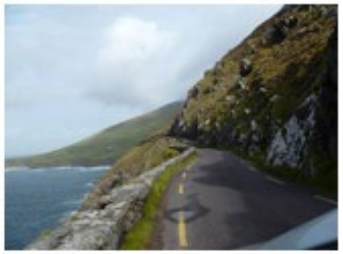
- Mobile network (IoT SIM-card)
- Triplesign portal

The customer can log in to the portal and see alerts, logs and status of the sign

Narrow road passes

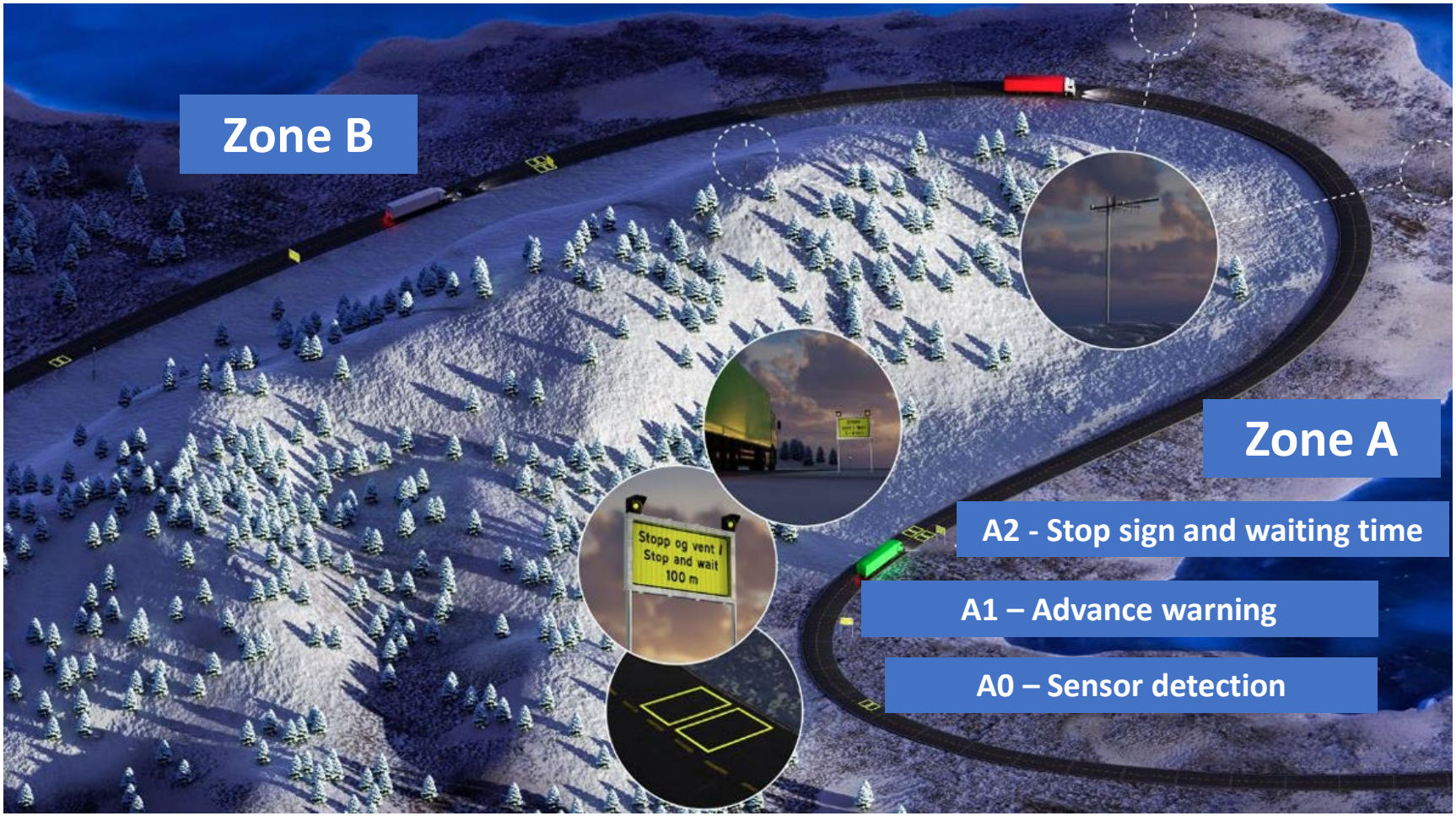






Narrow road situation in Norway

- 10 – 12% of country roads are too narrow for two (big) vehicles to meet
- No budget to solve this with traditional methods
- Traditional methods often lead to major interventions in nature
- Looking for innovative and sustainable solutions


Zone B
Zone A
A2 - Stop sign and waiting time
A1 – Advance warning
A0 – Sensor detection
Stopp og vent /
Stop and wait
100 m


Stopp og vent /
Stop and wait
100 m
STOPP
Vent / Wait
2 - 4 min
STOPP
Vent / Wait
5 - 10 min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VENEZIA
CORMANO

Congestion situation in Italy

- The most congested arterial motorway in Milan is the A4 from Turin to Trieste
- An average of 70.000 vehicles is passing daily
- With peaks exceeding 200.000 vehicles per day

Autostrade per l'Italia was looking for a sustainable solution to speed up travel times for vehicles and above all reduce the environmental impact:

Every hour of congestion = 1.5 tons of CO2 emission!

Real time information

High winds at highway bridges

Uddevalla bridge - Sweden

Warnings for slippery conditions

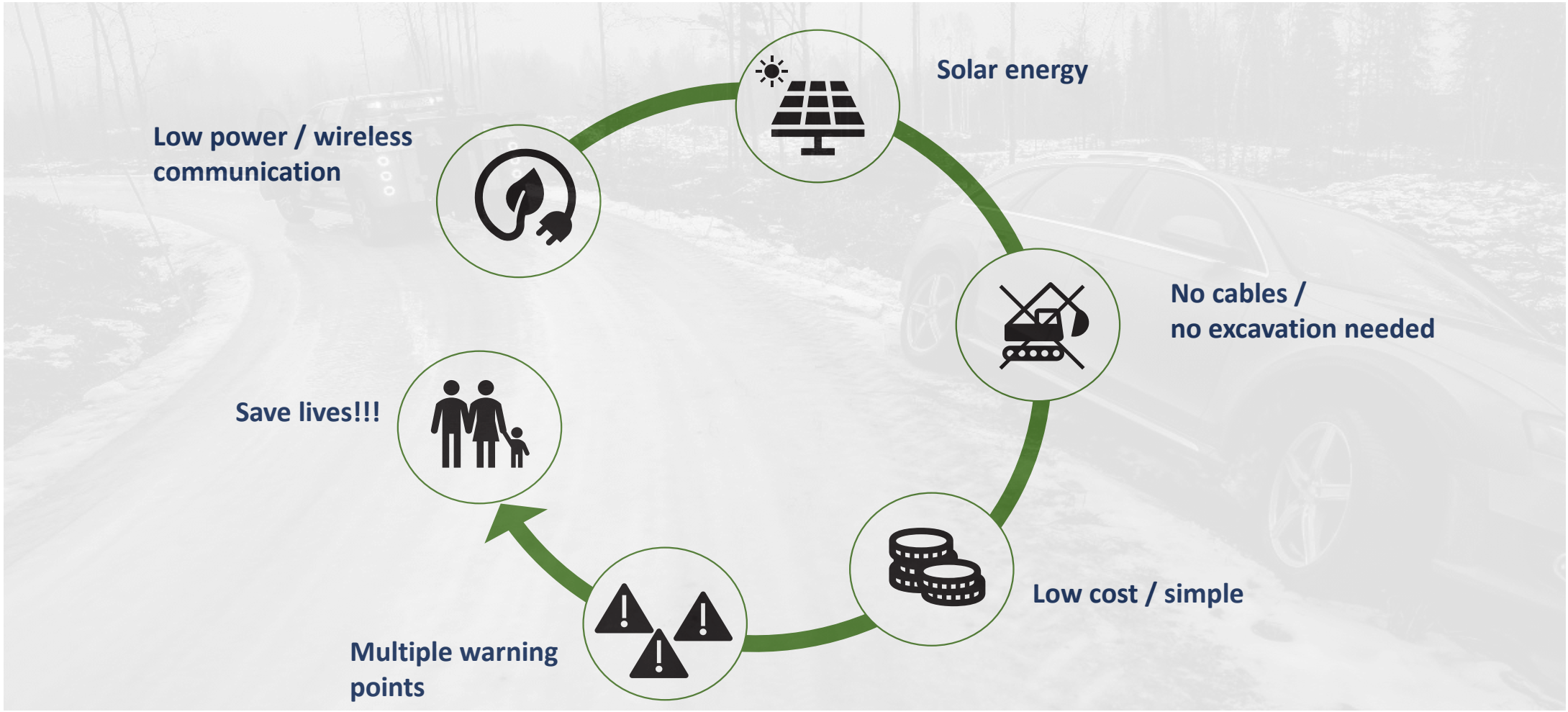
Traffic jam warnings

Snow chain obligation

Conclusions

Triplesign System is a very sustainable and affordable solution for traffic safety

- **The new secured communication system makes it possible for smaller communities to install and operate their own traffic management systems**
- **Systems can be autonomous and warn drivers for specific dangers using sensor technology and AI**
- **The system can be integrated – wirelessly – with existing intelligent traffic management systems**


Solar energy
No cables /
no excavation needed
Low cost / simple
Multiple warning
points
Save lives!!!
Low power / wireless
communication