

# Connected Wise

*Safer and Smarter Transportation*



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## Vision Based Communication for V2X Applications



Connected Wise LLC @2023

## The Problem

# Can Autonomous Vehicles Travel Safely on Rural Highways?



### No Power or Internet Access

Existing technology requires power and internet access for wireless communication.



### Maintenance is Very Costly

Maintaining the connected vehicle infrastructure is difficult and costly.



### Dispersed Settlements

Requires substantial investment to provide the same standard of coverage.



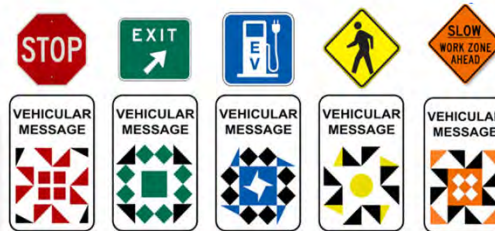
“ The traffic fatality rate is twice as high in rural areas, constituting almost 98% of United States. ”

## The Solution

# Smart Vehicles & Smart Infrastructure

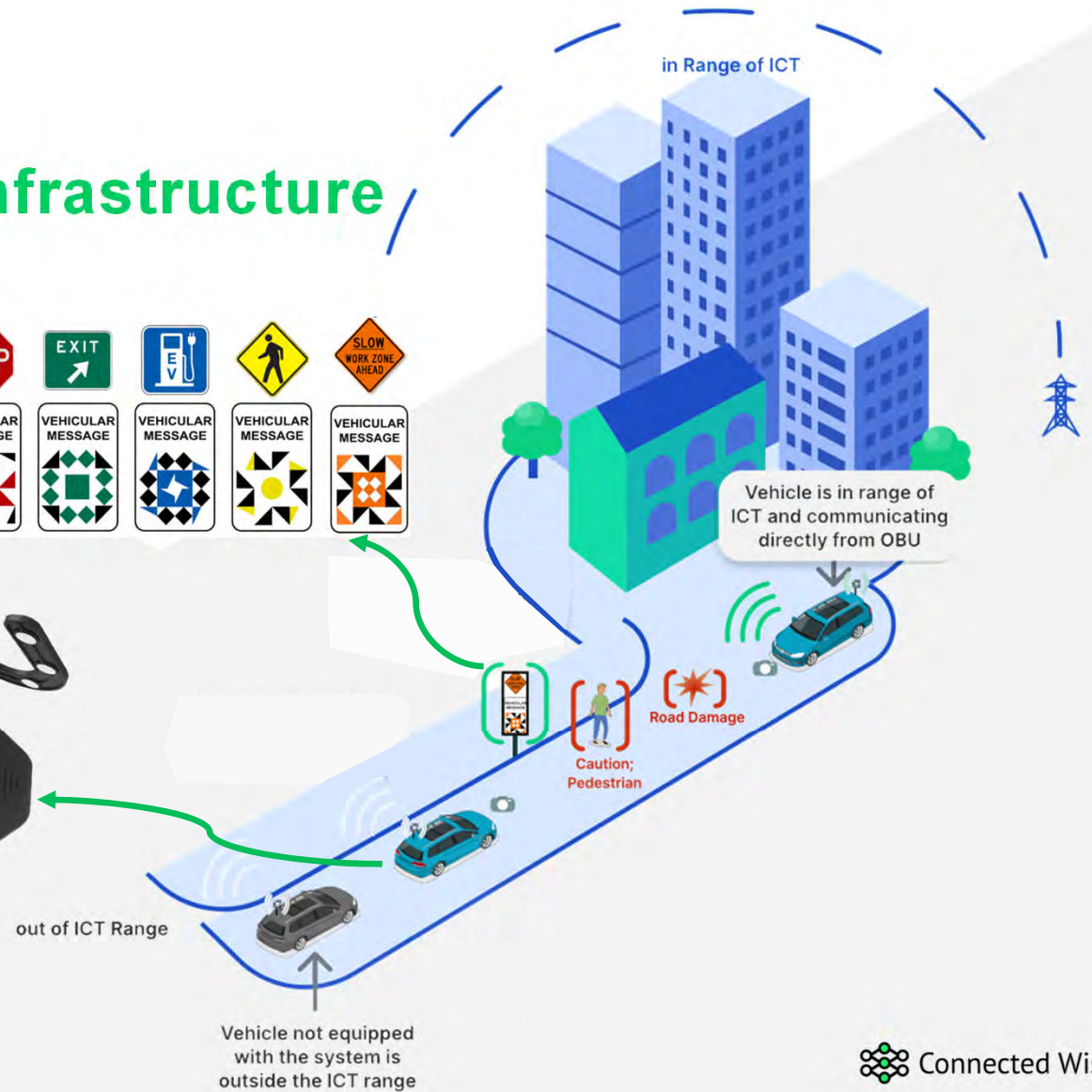
## VisionSign (Patented)

Smart Traffic Signs using vision-based communication and visual hashing algorithm and AI object detection models



## VisionConnect

ADAS solution providing optimized AI-empowered driving safety and connectivity for all vehicles.



## Our Solution

# Vision Based Communication via Smart Traffic Signs

Each I2V message is assigned to a unique visual identifier placed on traffic signs. The message is still relayed even when the sign is not fully visible, benefiting from the power of image recognition.



## Secure Communication

Encrypted identifiers for I2V messages with a secure visual hashing algorithm

## Works Robustly & Reliably

Unlike QR codes, it works reliably under extreme environment conditions

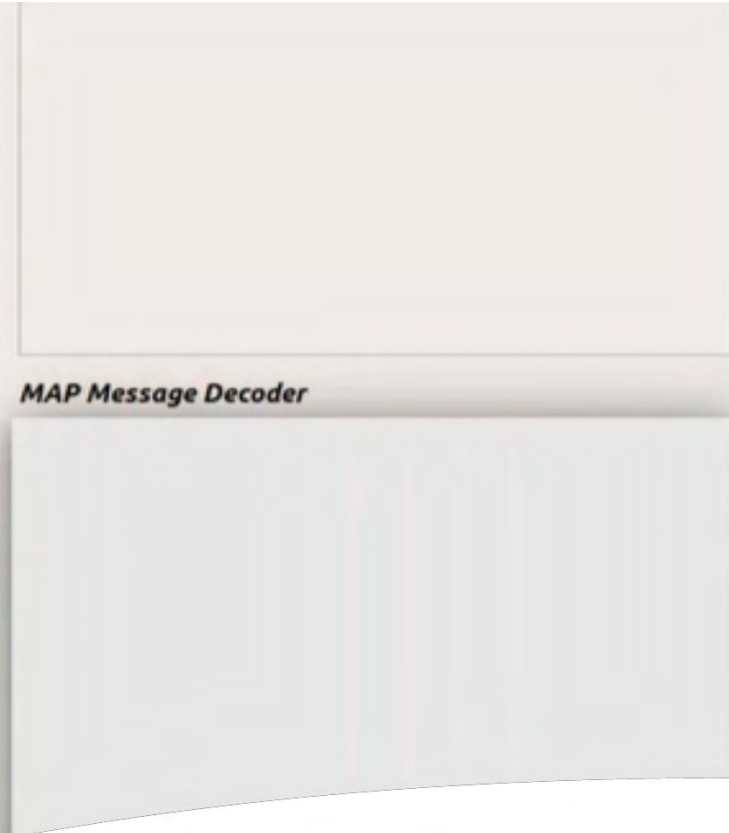
## Low Cost of Infrastructure

The operational costs are 95% cheaper compared to wireless communication





The Technology



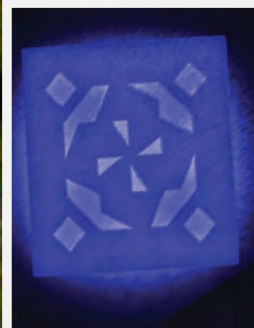
## A Machine Vision Technology for autonomous vehicle navigation

With the help of a visual identifier on a road sign, autonomous vehicles will calibrate their **localization and mapping at high precision** in reference to an accurate road geometry data.

# Invisible Application of Mapping Identifiers



UV Image



Visible Image

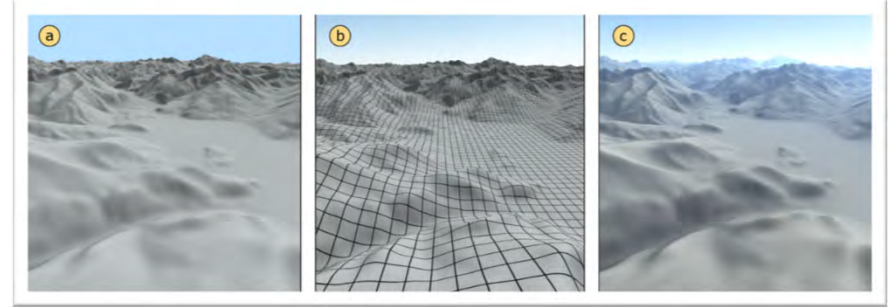


## Product Development Plan



### 3D Terrain Mapping Capacity

3D-based visualization and dissemination tool will be designed to bridge the discovery and exploitation of geospatial information with the local geometry on the terrain for the DOD user community.



Source: Dübel, S., & Schumann, H. (2017). Visualization of features in 3d terrain. *ISPRS International Journal of Geo-Information*, 6(11), 357.



### Cyber-secure Platform Adaptation

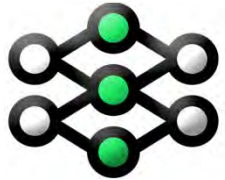
- A secure web-based tool will be developed in order to provide a convenient process to deploy message signs for V2I applications of the Department of Defense.
- Using this tool, one can upload the TIM message content and update it anytime.



### UV-Transparent Smart Signs

- The deployment of physical signs is difficult.
- The message identifier will allow the message to be visible only to the full spectrum camera thanks to the UV bandpass filter





# CONNECTED WISE

*Safer & Smarter Transportation*

## Driving can be safer and smarter!



Location(s)



Orlando, Florida, USA



Teknopark Izmir, Urla, Izmir, TURKIYE



Email

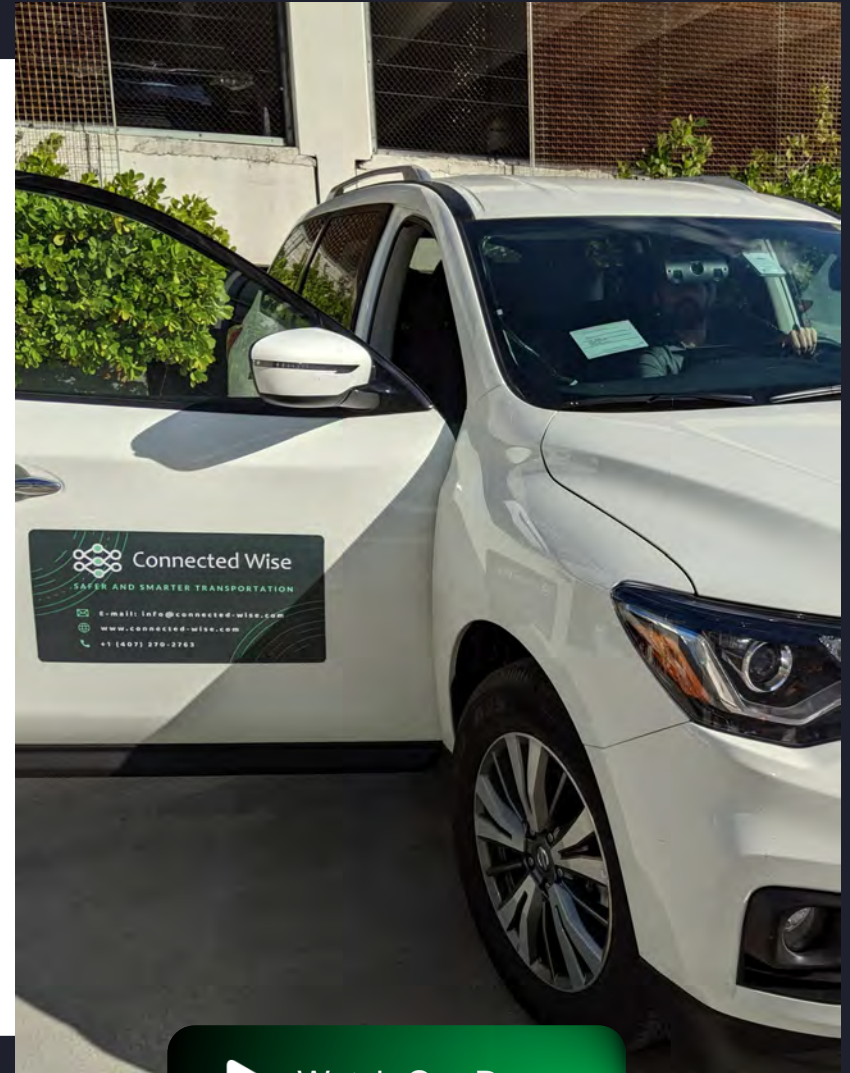
[info@connectedwise.com](mailto:info@connectedwise.com)



Website

[www.connectedwise.com](http://www.connectedwise.com)

[www.vision2x.com](http://www.vision2x.com)



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