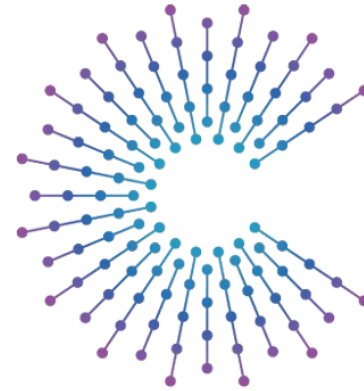# Connected Safety Birds of a Feather Working Group

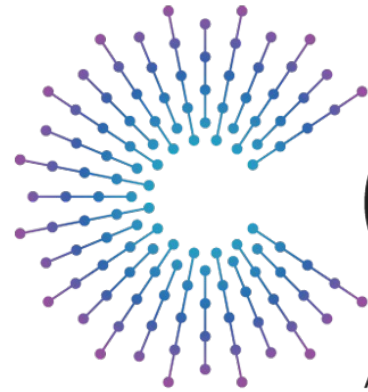All Members Meeting
April 17, 2024

COVESA
Accelerating the future of connected vehicles

Thank you for joining!

Meeting will start shortly

Connected Safety Birds of a Feather Working Group

All Members Meeting
April 17, 2024

COVESA
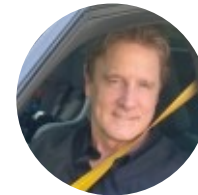Accelerating the future of connected vehicles

Hosted by:

Tim VanGoethem
Chief Product Officer
Emergency Safety Solutions

Larry Williams
Co-founder
LiDAR Saving Lives Public Safety Coalition

Connected Safety Birds of a Feather Working Group

All Members Meeting
April 17, 2024

Today's Agenda

- Welcome and Introductions – Tim VanGoethem & Larry Williams

- Connected Safety BoF & Journey Map Recap - Tim VanGoethem

- Enabling accurate and prompt implementation of rescue services and start of emergency response
  - Visual contextual information - Magnus Andersson (Terranet AB,)
  - Gaps for Intelligent Collision Data to PSAPs - Guillaume Ouellette (WirelessCar)
  - State of Connectivity to Emergency Services - Roger Lanctot (TechInsights)

- Upcoming Meetings - Tim VanGoethem

- Next Steps and Close

Connected Safety Birds of a Feather Working Group

All Members Meeting
April 17, 2024

Connected Safety BoaF Goal & Strategies

Bring together public safety, automotive, commercial transportation, and government to make our roadways safer for everyone:

- Define comprehensive stakeholder-based safety-related scenarios and value propositions

- Collaborate with COVESA members and others safety-related organizations to develop safety expertise and community within COVESA

- Develop integrated safety system prototypes and references implementations

- Publish white papers on key findings, best practices, and implementation recommendations

Connected Safety Birds of a Feather Working Group

All Members Meeting
April 17, 2024

Connected Safety BoaF Result

Accelerate delivery of connected technologies to benefit everyone that shares, protects, and maintains our roadways. Examples:

- Protect and give aid to vulnerable vehicles and occupants stranded along roadways

- Reduce response time and secondary collision risk for motorists involved in a crash

- Provide 911 Public Safety organizations with critical information so that they dispatch the right personnel and equipment to the scene

- Mitigate liability and lost productivity for commercial vehicles involved in roadway crashes
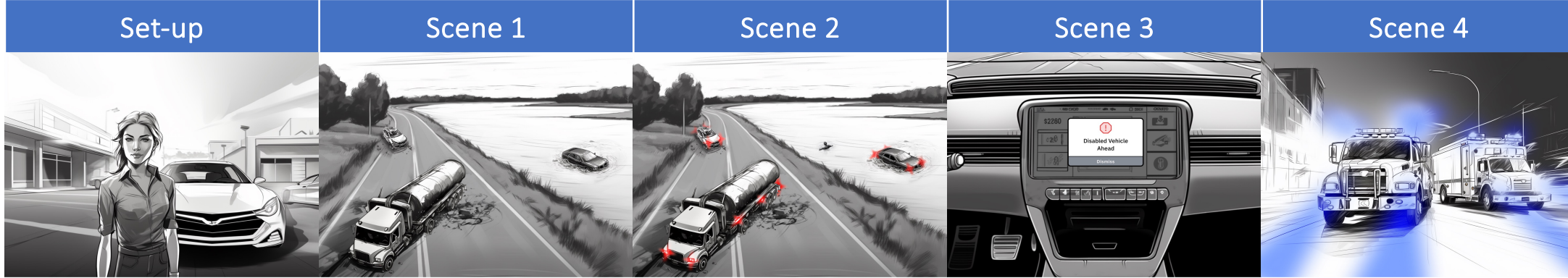
Journey Map Example (1 of 2)

	Set-up	Scene 1	Scene 2	Scene 3	Scene 4
Imagery Cartoons, animated presentations, or demonstrations that bring storyline to life					
Storyline Overall story that we're bring to life	Sophia is a 24-year-old professional that is commuting to work in her new EV.	A tanker truck abruptly changes lanes, collides into Sophia's car, and forces the driver of a rental car to swerve into a nearby lake. The embedded vehicular emergency sensor triggers the submersion escape system in the rental car and instantaneous IP notification for emergency services in all vehicles. [1]	Recognizing that a collision has occurred, all three vehicles automatically flash hazard and other vehicle lights at a faster rate so that other drivers have more time to react, and Emergency Responders can see them.	In parallel, on-coming drivers receive an alert in their in-dash system so that they have even more time to react to the upcoming crash scene.	The nearby E911 center is notified and dispatches a police car, fire truck, and ambulance to the scene.
Value Proposition The value that each company and technology brings to this story		• Automated submersion system enables rental car occupants to escape quickly. • Instantaneous IP notification enables accurate and prompt implementation of rescue services and start of emergency response.	• Conspicuous lighting protects scene, gives other motorists time to slow down and move over, and helps locate vehicles that has left the roadway.	• Digital alerts work in tandem with lighting alerts to protect the scene and give motorists time to slow down and move over.	• Timely notification of vulnerable vehicle location reduces response time and further collision risk.

1. Separate Journey Maps can be used to capture the stories for the tanker truck and rental car occupants since they unlock different solutions and value propositions. The following scenes will focus on Sophia.

Journey Map Example (1 of 2)

	Scene 5	Scene 6	Scene 7	Scene 8	Scene 9
Imagery Cartoons, animated presentations, or demonstrations that bring storyline to life					
Storyline Overall story that we're bring to life	The E911 Dispatcher sees that the tanker truck has leaked potentially hazardous materials onto the road.	Fire responders are provided a VIN-specific extrication guide for Sophia's EV.	Sophia see a map indicating her location with icons for the responding vehicle location and their projected ETA. In parallel, family/emergency contacts are notified and provided the same map. .	Responders arrive on scene and safely remove Sophia from her vehicle.	Sophia seems OK but is taken to the hospital for further medical evaluation. Vital health parameters are transmitted to the hospital while in transit. Family/emergency contacts are updated.
Value Proposition The value that each company and technology brings to this story	• LiDAR/radar/camera 3D point cloud let's E911 Dispatcher assess scene and better inform emergency & incident responders what to expect • Point Cloud image protects privacy since no identifying information is visible.	• Emergency Responders can safely extract victims without compromising the vehicle's power wiring or battery system that may lead to fire or hazardous materials being spilled into environment.	• Piece of mind that someone is on their way and when they will arrive. • Awareness that a loved one is in danger, but help is on the way.	• Reduced response time decreases risk of secondary collision. • Proper on-scene care minimizes complications.	• Sophia is safe and can focus on recovery. • Sophia's family knows that she's OK and where to meet her.

Submerged Vehicle Needs

Example "Network Effect" of Connected Vehicle BoF

- AWOS sensors to automatically roll down windows to increase occupant survival.

- Instantaneous IP notification of 9-1-1 public safety to expedite arrival of rescuers.

- Faster rescue (police, fire, EMS) with automatic emergency messaging

- Enhance visibility with automatic emergency lighting

- ~500 US fatalities/year due to submersion

- Occupants have ~1 minute to exit before vehicle starts to sink

- Time is lost trying to open door, call for help, or wait for compartment to fill

Source: Sabrina Percher | COO & Co-Founder | AWOS Technologies

Vulnerable Vehicle Needs

In US alone:

- 23,000 people injured or killed annually

- a crash occurs every 4 minutes

- problem is compounding at 8.4%/year

What can be done to address this?

- Building awareness

- Education/Training

- Regulatory Solutions

- Leverage Technology

  - Lighting Alerts proven to compel 87% drivers to reduce speed and move over ~1/4 mile sooner verses 30% that moved over with conventional hazard lighting

  - Digital Alerts give drivers advance warning, reducing collision risk by 90% and hard braking events by 80%

Source: Andrew Coetzee | Chief Safety Advocate | Emergency Safety Solutions

Journey Map Example (1 of 2)

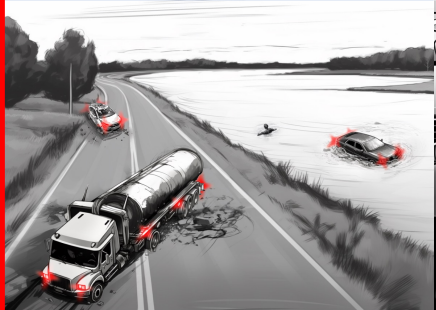|	Set-up	Scene 1	Scene 2	Scene 3	Scene 4
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Shaping the future of road safety

April 2024
Magnus Anfersson, CEO

terranet

CURRENT CHALLENGES TO OVERCOME

→ Crash data is lost during crashes

→ Information is rarely sent quickly enough, if at all

→ Visual information is not sent

→ Poor reliability and accuracy in data collection

→ Lack of fast communication between technologies and systems

terranet

SCENE 1

Tanker truck changes lanes – Crash happens

Value proposition:
Instantaneous IP notification is sent to rescue services

SCENE 2

Hazardous materials leak onto the road

Value proposition:
LiDAR/radar/camera 3D point cloud informs emergency responders about what to expect

SCENE 3

Emergency personnel are provided with information

Value proposition:
First responders get crash-specific information on their way to the crash

IN ALL SCENES, SPEED AND ACCURACY ARE VITAL

terranet

IMAGINE

The world's first end-to-end fully-integrated system for crash avoidance, detection, and instantaneous
crash response by emergency responders

terranet

IMAGINE A NEXT-GENERATION 112 EMERGENCY SERVICE

That sends out real-time visual data
Giving first responders crucial pre-arrival information

IMAGINE A NEXT-GENERATION 112 EMERGENCY SERVICE

Where preliminary crash data can be sent before any hardware is destroyed in the crash

terranet

terranet

IMAGINE A NEXT-GENERATION 112 EMERGENCY SERVICE

That sends out lossless and relevant crash data, containing:

- **Airbag deployment data**
- **In-car monitoring**
- **Events leading up to the crash**

IMAGINE A NEXT-GENERATION 112 EMERGENCY SERVICE

That you can trust in any weather or lighting conditions – Accurately recording each millisecond of the crash

terranet

IMAGINE A NEXT-GENERATION 112 EMERGENCY SERVICE

That through BlincVision's quick detection and sensor fusion gives other sensors the time to react to the danger

terranet

In 70% of all accidents with pedestrians, cars actually have adas systems

terranet

WE STRIVE FOR ZERO
TRAFFIC CRASHES

But when crashes do occur, we want to enable the smartest
and most efficient emergency response possible

BlincVision - the fastest and most accurate anti-collision system for automotives in urban road traffic

terranet

FOR US – EVERY METER MATTERS
FOR YOU – EVERY SECOND COUNTS

Integrating the fastest and smartest ADAS system
with the fastest, smartest and most effective emergency response
possible

Post-crash care for when crashes do happen

ROAD SAFETY IS A GLOBAL ISSUE

terranet

terranet

1.3 million people die
in traffic every year

40% of the fatalities
occur in urban areas

More than 50% of all road traffic deaths are among vulnerable road users: pedestrians, cyclists, and motorcyclists

terranet

City traffic is getting more and more complex

terranet

Terranet is redefining what it means to move safely in urban traffic

THINGS ARE MOVING IN THE RIGHT DIRECTION

NEW REGULATIONS, TECHNOLOGICAL DEVELOPMENT, AND EFFECTIVE COLLABORATION IS KEY TO ACHIEVE VISION ZERO!

NEW SAFETY REGULATIONS DRIVE DEMAND FOR BLINCVISION AND
MORE ADVANCED AUTOMATIC EMERGENCY BRAKING (AEB) SOLUTIONS

terranet

Road Fatalities

PASSIVE SAFETY TECHNOLOGY

ACTIVE SAFETY TECHNOLOGY

2022
AEB mandatory in new vehicles in EU

2023
AEB requirement proposed by NHTSA and FMCSA

2024
EU Pedestrian and bicycle detection Regulation

2030
UN Decade of Action for Road safety

2050
Vision Zero

2001   2017   2022   2050
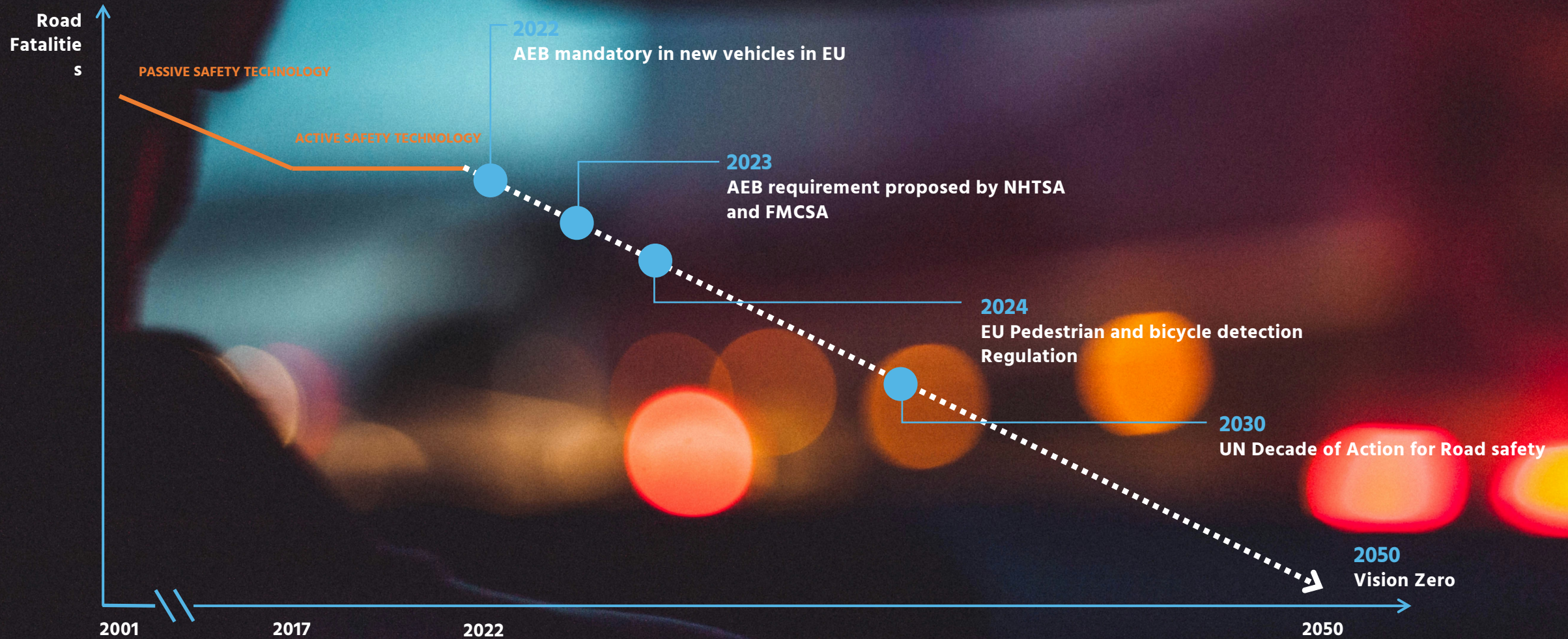
terranet

→ Vulnerable road users is a top priority

→ Technical constraints

→ Low latency is important

→ 2026 revision is going to be tougher

ABOUT TERRANET

We are a technology development company with a passion for cutting-edge sensor technologies.

Offices in Gothenburg, Sweden and Stuttgart, Germany with a HQ in Lund, Sweden.

We consist of world-class engineers and experts from across the world and a variety of sectors.

Listed on Nasdaq First North Premier Growth Market since 2017 (TERRNT-B).

terranet

terranet

www.terranet.se

WirelessCar

CELEBRATING 25 YEARS

Guillaume Ouellette
Product Manager

1   Understand the current landscape

2   Understand what the need is

3   Establish strategies that work for key stakeholders

4   Get on with it with ongoing dialogue

WirelessCar

1	Understand the current landscape
2	Understand what the need is
3	Establish strategies that work for key stakeholders
4	Get on with it with ongoing dialogue

WirelessCar

The value chain

OEM   Connectivity   Occupants   TPS Call Centre   PSAP   First Responders

WirelessCar

The value chain

OEM | Connectivity | Occupants | TPS Call Centre | PSAP | First Responders

WirelessCar

OEMs

OEMs add hardware or services in vehicles if it will…

Sell more cars or generate revenues

Reduce costs or improve efficiencies
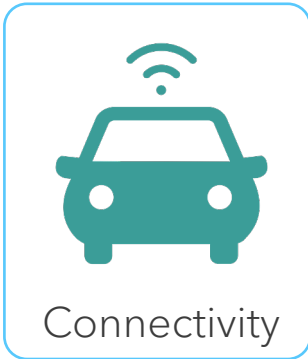
Regulatory requirement

WirelessCar

The value chain

OEM   Connectivity   Occupants   TPS Call Centre   PSAP   First Responders

WirelessCar

Connectivity partners

Whether in-housed or outsourced, they are limited to:

The hardware in cars

The data exposed to the cloud

The features requested by the OEM

WirelessCar

The value chain

OEM Connectivity Occupants TPS Call Centre PSAP First Responders

WirelessCar

Every country has different setups for 112/911/999

Model 1

Model 2

Model 4

Model 5
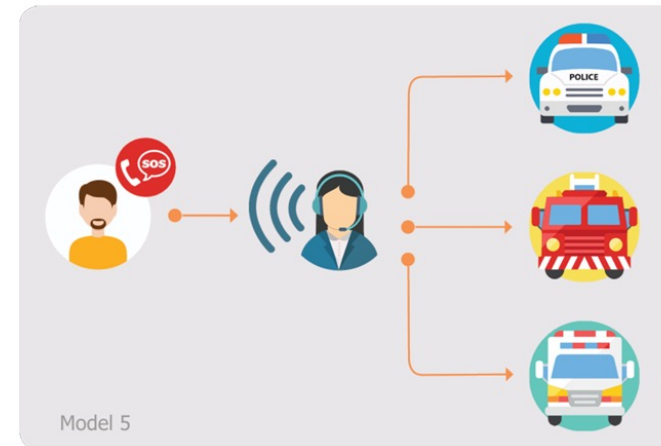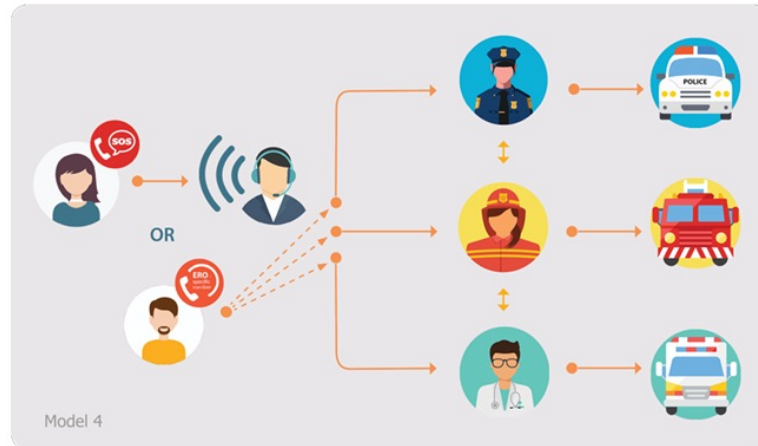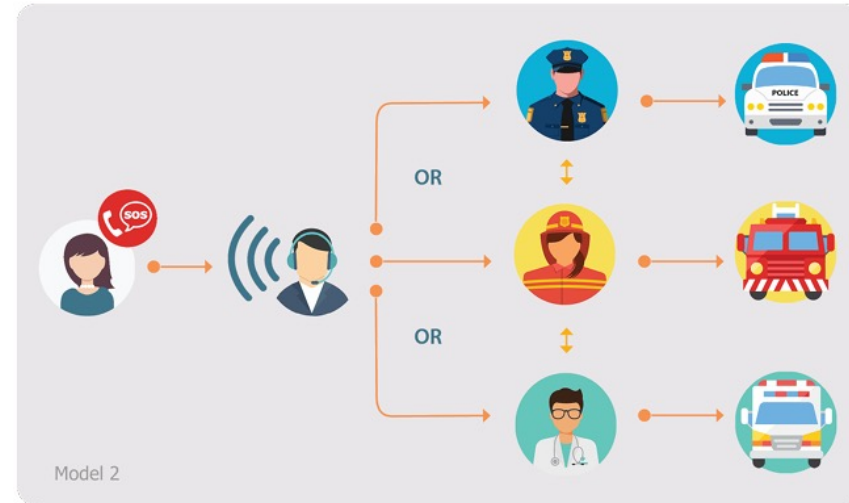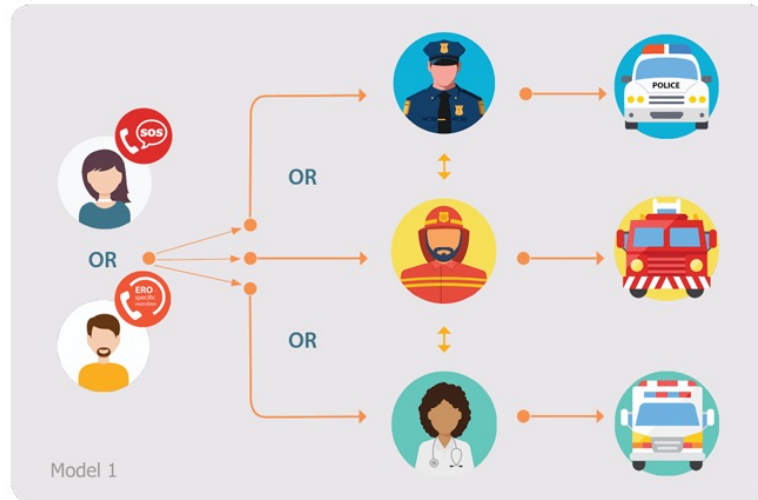
Source: EENA 2023 PSAPs Global Edition

WirelessCar

The value chain

OEM   Connectivity   Occupants   TPS Call Centre   PSAP   First Responders

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Every country uses different technology

Example: difference of equipment in police vehicles between two countries:

100% radio dispatch

Mix of radio and CAD

There is no "one way" things are done, even within one country.

WirelessCar

Public Safety Agencies

They have:

- Limited and often reducing budgets
- Complex setups
  - Example: UK has 45 police services with
    - Different dispatch systems
    - Different vehicles
    - Different uniforms
    - Different equipment
- Different IT suppliers, consortiums
- Different standard operating procedures
- Different expectations of emergency services by the public

Public safety organizations do what they do because based on their definition of success, it works, changes to this requires thorough reviews and receives much scrutiny

**General government total expenditure on public order and safety, 2022, % of GDP**

	Public order and safety	Police services	Fire protection services	Law courts	Prisons	R&D Public order and safety	Public order and safety n.e.c.
EU*	1.7	0.9	0.2	0.3	0.2	0.0	0.1
euro area 19*	1.7	0.9	0.2	0.3	0.1	0.0	0.1
euro area 20*	1.7	0.9	0.2	0.3	0.1	0.0	0.1
Belgium*	1.7	1.0	0.2	0.3	0.1	0.0	0.1
Bulgaria	2.5	1.3	0.2	0.7	0.2	0.0	0.2
Czechia	1.8	0.9	0.3	0.3	0.2	0.0	0.2
Denmark	0.9	0.5	0.1	0.1	0.2	0.0	0.0
Germany*	1.7	0.8	0.3	0.4	0.1	0.0	0.1
Estonia	1.8	1.1	0.2	0.3	0.1	0.0	0.1
Ireland	0.7	0.4	0.1	0.2	0.0	0.0	0.0
Greece	2.0	1.2	0.3	0.3	0.1	0.0	0.0
Spain*	1.9	1.2	0.2	0.4	0.1	0.0	0.0
France*	1.7	0.9	0.3	0.3	0.2	0.0	0.1
Croatia	2.1	1.3	0.2	0.4	0.1	0.0	0.1
Italy	1.8	1.1	0.2	0.3	0.2	0.0	0.0
Cyprus	1.6	1.2	0.1	0.1	0.1	0.0	0.0
Latvia	2.0	1.0	0.2	0.4	0.2	0.0	0.2
Lithuania	1.2	0.4	0.2	0.2	0.1	0.0	0.2
Luxembourg	1.2	0.5	0.2	0.2	0.2	0.0	0.0
Hungary	2.0	1.2	0.2	0.3	0.2	0.0	0.0
Malta	1.4	0.7	0.1	0.4	0.2	0.0	0.0
Netherlands	1.9	0.9	0.2	0.3	0.3	0.0	0.2
Austria	1.3	0.7	0.2	0.3	0.1	0.0	0.1
Poland	2.3	1.1	0.2	0.5	0.2	0.0	0.2
Portugal*	1.6	1.0	0.1	0.3	0.1	0.0	0.1
Romania	2.1	1.1	0.3	0.4	0.1	0.0	0.2
Slovenia	1.6	0.8	0.1	0.4	0.1	0.0	0.1
Slovakia	2.3	1.0	0.2	0.3	0.2	0.0	0.7
Finland	1.2	0.5	0.2	0.2	0.1	0.0	0.0
Sweden	1.3	0.7	0.2	0.2	0.2	0.0	0.0
Iceland	1.5	0.9	0.1	0.2	0.1	0.0	0.3
Norway	0.9	0.4	0.2	0.1	0.1	0.0	0.0
Switzerland	1.7	0.7	0.1	0.3	0.2	0.0	0.4

Source: Eurostat (gov_10a_exp)
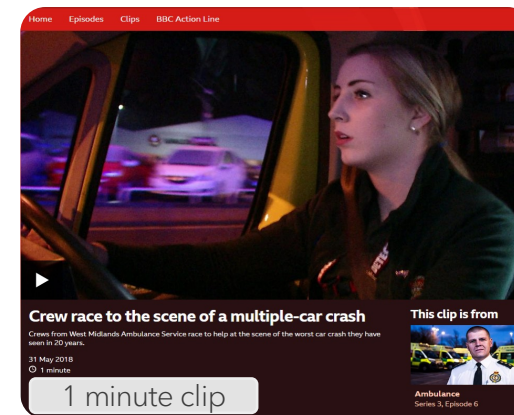* provisional

eurostat

WirelessCar

1   Understand the current landscape

2   Understand what the need is

3   Establish strategies that work for key stakeholders

4   Get on with it with ongoing dialogue

WirelessCar

Improve the context
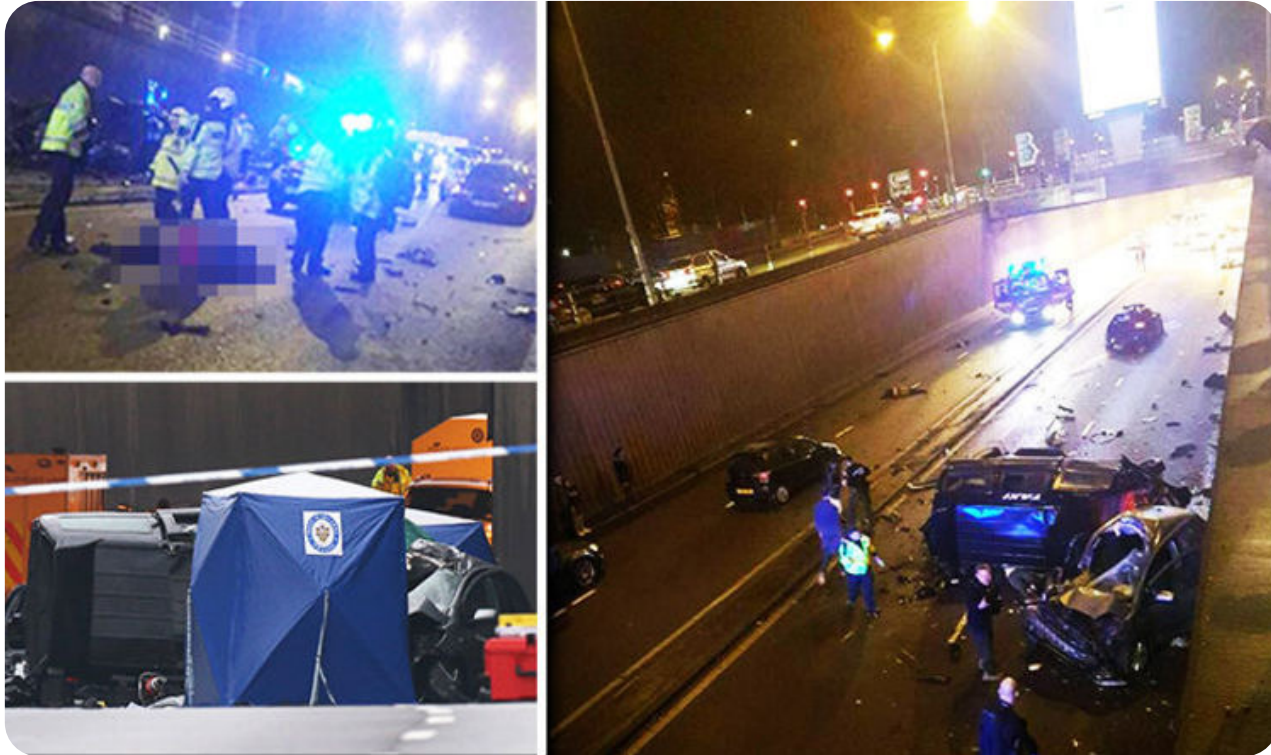
Example:

- Belgrave Middleway incident in Birmingham, 2017
- Seven vehicles involved
- Six deaths
- Caused by a young driver in a performance car under the influence at 100mph

1 minute clip

Crew race to the scene of a multiple-car crash
Crews from West Midlands Ambulance Service race to help at the scene of the worst car crash they have seen in 20 years.
31 May 2018
1 minute

This clip is from

Ambulance
Series 3, Episode 6

WirelessCar

The mission

Getting the right help, to the correct location, with the right equipment, as quickly as possible.

WirelessCar

Where TPS eCall helps today

PSAPs have refined their approaches over decades, the advent of eCall has brought benefits:

- Especially in North America, simply making the data available outside of the car
- Validating the call and only passing "real" cases to the PSAP
- Understanding the customer's language immediately
- Staying on the line with occupants for as long as it takes
- In the EU, going beyond the MSD as technology advances
- Building relationships with PSAPs

The downside:

- Delay of reaching the PSAP for critical cases
- Especially in North America, customers unaware subscriptions have expired
- Inconsistency of data available to establish the context
- Only provides data on the subject vehicle, PSAPs must merge calls

WirelessCar

1   Understand the current landscape

2   Understand what the need is

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WirelessCar

Call Center Services – WirelessCar Mission

Providing call centres with the best possible context from connected cars to help customers in moments of anxiety or distress

TPS eCall / ACN
Manage critical situations and encourage PSAPs to engage the right resources to each situation

bCall
Respond confidently to breakdown and malfunction situations

SVT
Manage legitimate vehicle theft situations and increase the opportunity to recover a customer's vehicle

iCall
Provide the right information to the customer at the right time to make each journey as enjoyable as possible

WirelessCar

Improve the context

The core objective is to save more lives, followed by helping people cope with moments of anxiety and distress.

Information commonly available today:

- Precise location of the event
- Number of occupants
- Are occupants belted
- Speed of the collision
- Which SRS components were deployed

Information sometimes available today:

- Language of driver
- Which collision system was triggered
- Likelihood of injuries

What is not fully achieved today:

- Clear executive summary of the collision
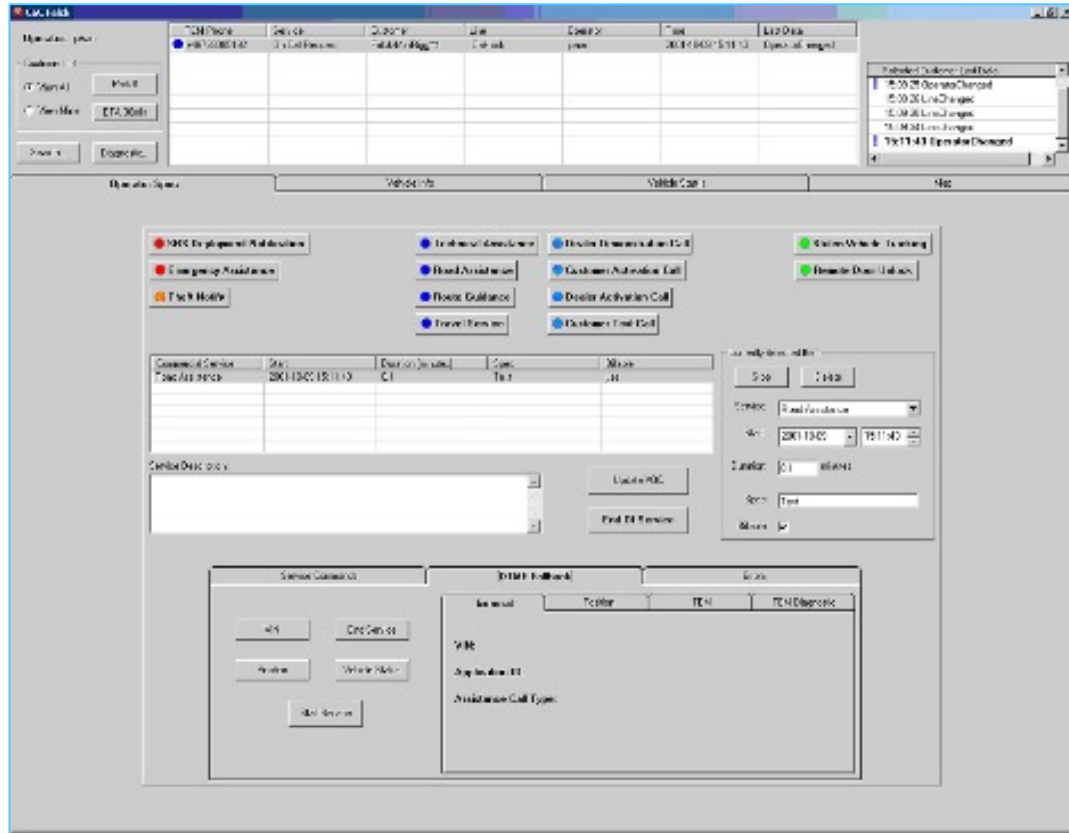- Make the data and context easily sharable
- Evidence of the credibility of the data

WirelessCar

Our Eco System Cocreators

For the past 25 years, WirelessCar has been working with partners that enrich the entire value proposition.
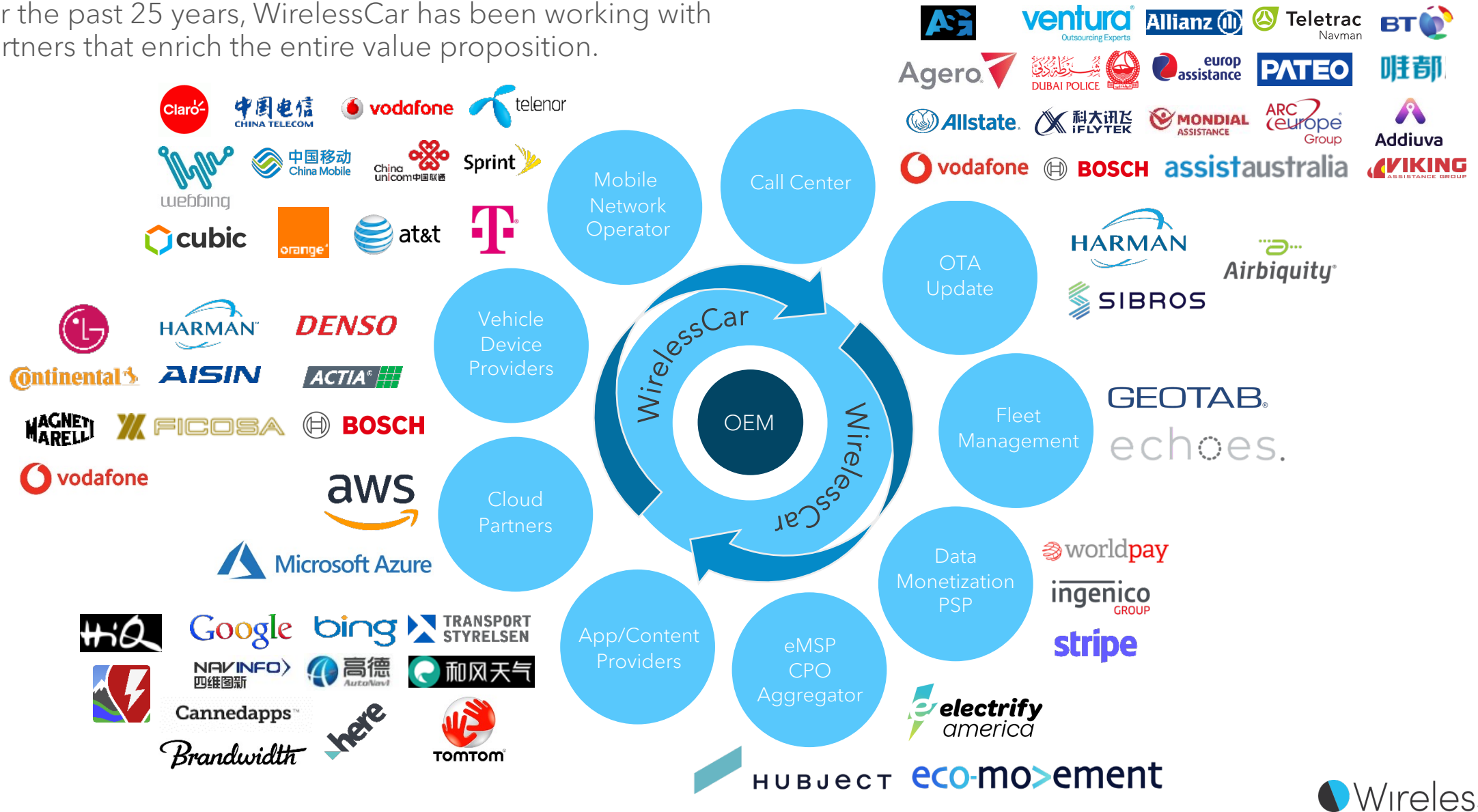
Evolution of the WirelessCar CCC

The content of this image has been simulated. No real data was used.

Roadmap Details – App bCall (Release 1)

Product Affected

Product Affected	
Call Center Client	
TPS eCall	
SVT	
xCall	■ (green)

Status

Status	
In Progress	■ (green)
Scheduled	
On Roadmap	

Availability

Availability	
Core Product	
Add-on	■ (green)
New Product	
TBD	

Primary Focus

Primary Focus	
OEM Stakeholder	
Call Centre - Mgmt	
Call Centre - Agent	
End Customer	■ (blue)
External Parties	

What

Enabling the start of a bCall from a smartphone, using data residing on the OEM companion app (including vehicle status, phone location, user's name, etc.), passed to the app API via the BFF

Why

In the EU, governments provide guidance to not remain in a broken-down car on fast roads, but bCall asks a customer to do just that. Additionally, a car bCall cannot be started if the vehicle has no power.
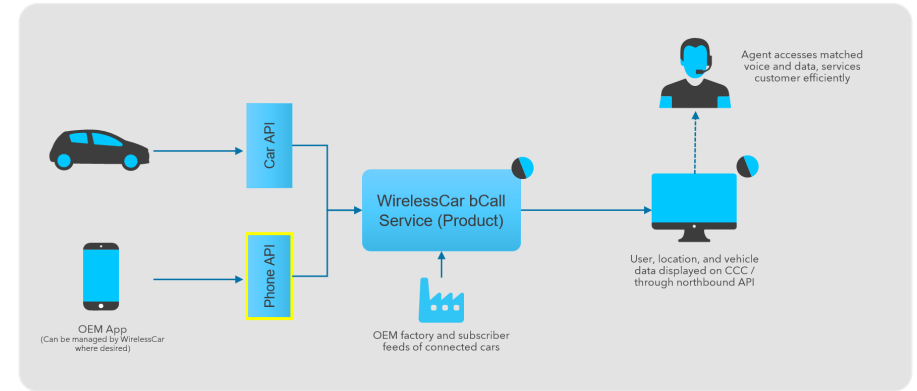
Expected Impact

- Provide call centre agents with both phone and car locations, static and dynamic data
- Increase the usefulness of existing companion apps
- Provide improved context to call centre agents
- Add a digital experience where embedded connectivity is not possible or viable

Current Status

- Work underway, onboarding from June 2024

Opportunities

- Contribute to the user stories for subsequent releases
- Early adoption by June 2024

TVP Roads Policing
7h ·

This is a reminder if you break down on the smart motorway get out of your vehicle and get behind the barrier. Luckily no injuries this morning on the #m1 #miltonkeynes but could have been far worse

#P310 #itsnotworththerisk #TPCshift #P6905

WirelessCar

The WirelessCar Outlook

- The EU is being driven by regulation (e.g., 16102) and programmes (e.g., Euro NCAP)
  - TPS eCall must be offered for the "life" of the car (often 10 years)
  - Regulation-driven
- US being driven by business models
  - SOS/TPS eCall is often attached to short subscriptions
  - Improvements often made by new actors on the value chain requiring revenues

Example goals:

Steps	Fragmented	Show Value	Grow Usage	Standardization
Value chain coordination	Ad hoc	10-25% of markets	50% of markets	>80% markets
Data sharing	US: Limited integrations EU: Voice, email	US: Limited integrations, data viewing EU:Email, direct data viewing	>10% API integration	>40% API integration
OEM data outlook	US: Fragmented EU: EN16102, Euro NCAP 2023		US: General consensus EU: 16102, NCAP 2026+	Recognized TPS eCall data set

WirelessCar

1   Understand the current landscape

2   Understand what the need is

3   Establish strategies that work for key stakeholders

4   Get on with it with ongoing dialogue

WirelessCar

Saving more lives every day through collaboration

OEMs

Call centre operators

Industry groups

Connected Safety Birds of a Feather Working Group
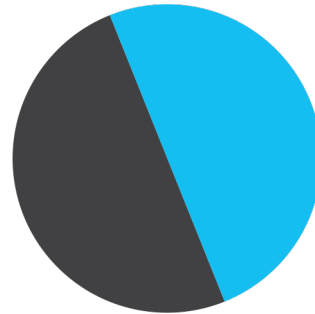
COVESA
Accelerating the future of connected vehicles

Regulatory / Programmes

WirelessCar

Let's connect

Guillaume Ouellette
Product Manager

WirelessCar

Authoritative Semiconductor & Microelectronics Intelligence Platform

Leveraging a unique reverse engineering competency, we reveal innovations in technology products that provide advanced technical and market analysis to organizations that will help guide them to make fact-based technology and intellectual property decisions.

Reverse Engineering

We help decision makers in semiconductor, system, financial, and communication service provider companies make more informed decisions on their product roadmaps with competitive technical intelligence.

We help supply chain and procurement professionals to more effectively negotiate with suppliers and understand true costs of technology products.

We collaborate with IP professionals in global technology companies, licensing entities and legal firms to plan strategies on the assertion/defense of their patent portfolios and licensing negotiations.

Market Analysis

We help business and technology leadership de-risk strategic investment and procurement decisions with visibility into semiconductor manufacturing, silicon demand, and capacity.

We enable more informed decision-making for product and market strategy with curated insight into the performance, application, and functionality across individual SoCs and aggregated across market segments.

This is all supported by building out stronger products from acquisitions (The Linley Group, VLSI and most recently with Strategy Analytics. Read more about Strategy Analytics here).

Spend Insights

We help competitive analysis teams at OEMs and component suppliers to understand design philosophies and BOM costs through deep-dive hardware teardowns of consumer electronics devices. This is delivered through the world's largest library of independent and nonbiased teardowns.

We help supply chain and category management teams to understand pricing and lead-time trends for the commodity electronic components that engineers are selecting for new designs.

Let's be Honest about Car Connectivity

65

The Automotive Industry Has Lost Its Way

A. GM dissolves OnStar as a standalone division
B. Next Gen eCall still relying on "minimum set of data"
C. Car makers obsessing over data monetization
D. Highway fatalities continue to rise
E. Loss of focus on the original purpose of connectivity
    – to speed emergency response, save lives

What's at Stake; What is Possible

A. The focus has shifted to collision avoidance

B. Auto makers are avoiding the post-crash care discussion – and responsibility

C. NG eCall shifts to packet-switched IP-based solution – a tiny step in the right direction

D. Failure to recognize the need for fast-as-possible communication of post-crash status of vehicle and passengers

E. Immediate data delivery must be the priority

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What is Possible

A. Cars come with faster networks, faster processors, faster wireless connections – but same old eCall

B. Data transmission must take priority – even if the voice call is preserved

C. The prioritization of safety is essential

D. This will define what connectivity actually means to the consumer

E. Today, connectivity means nothing to the average consumer – it means more to the car maker

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What Actually Happens after a Crash?

	Set-up	Scene 1	Scene 2	Scene 3	Scene 4
Imagery Cartoons, animated presentations, or demonstrations that bring storyline to life					
Storyline Overall story that we're bring to life.	Sophia is a 24-year-old professional that is commuting to work in her new EV.	A tanker truck abruptly changes lanes, collides into Sophia's car, and forces the driver of a rental car to swerve into a nearby lake. The embedded vehicular emergency sensor triggers the submersion escape system in the rental car and instantaneous IP notification for emergency services in all vehicles. 1	Recognizing that a collision has occurred, all three vehicles automatically flash hazard and other vehicle lights at a faster rate so that other drivers have more time to react, and Emergency Responders can see them. .	In parallel, on-coming drivers receive an alert in their in-dash system so that they have even more time to react to the upcoming crash scene.	The nearby E911 center is notified and dispatches a police car, fire truck, and ambulance to the scene.
Value Proposition The value that each company and technology brings to this story.		• Automated submersion system enables rental car occupants to escape quickly. • Instantaneous digital, sensor-driven IP notification enables accurate and prompt implementation of rescue services and start of emergency response.	• Conspicuous lighting protects scene, gives other motorists time to slow down and move over, and helps locate vehicles that has left the roadway.	• Digital alerts work in tandem with lighting alerts to protect the scene and give motorists time to slow down and move over.	• Timely notification of vulnerable vehicle location reduces response time and further collision risk.

1. Separate Journey Maps can be used to capture the stories for the tanker truck and rental car occupants since they unlock different solutions and value propositions. The following scenes will focus on Sophia.

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What Data Do First Responders Need?

A. How many people in the car?

B. How severe was the crash?

C. Where is the car? - Upside down? Underwater?

D. Is the car ICE/EV/PHEV/Hybrid? What are the extraction requirements?

E. Will other drivers be notified of the crash location?

F. What are known existing health conditions of driver?

G. Is the car stolen?

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What is the Legacy of Angela Chao?

What about the Francis Scott Key Bridge Collapse?

AWOS: Message in a Bridge Collapse

7
2

If 5G isn't about Saving Lives, Why Bother?

A. Safety relevance
B. Future proofed
C. Enhanced performance for safety, infotainment
D. Multi-modal communications
E. Tele-operations
F. Satellite connectivity?

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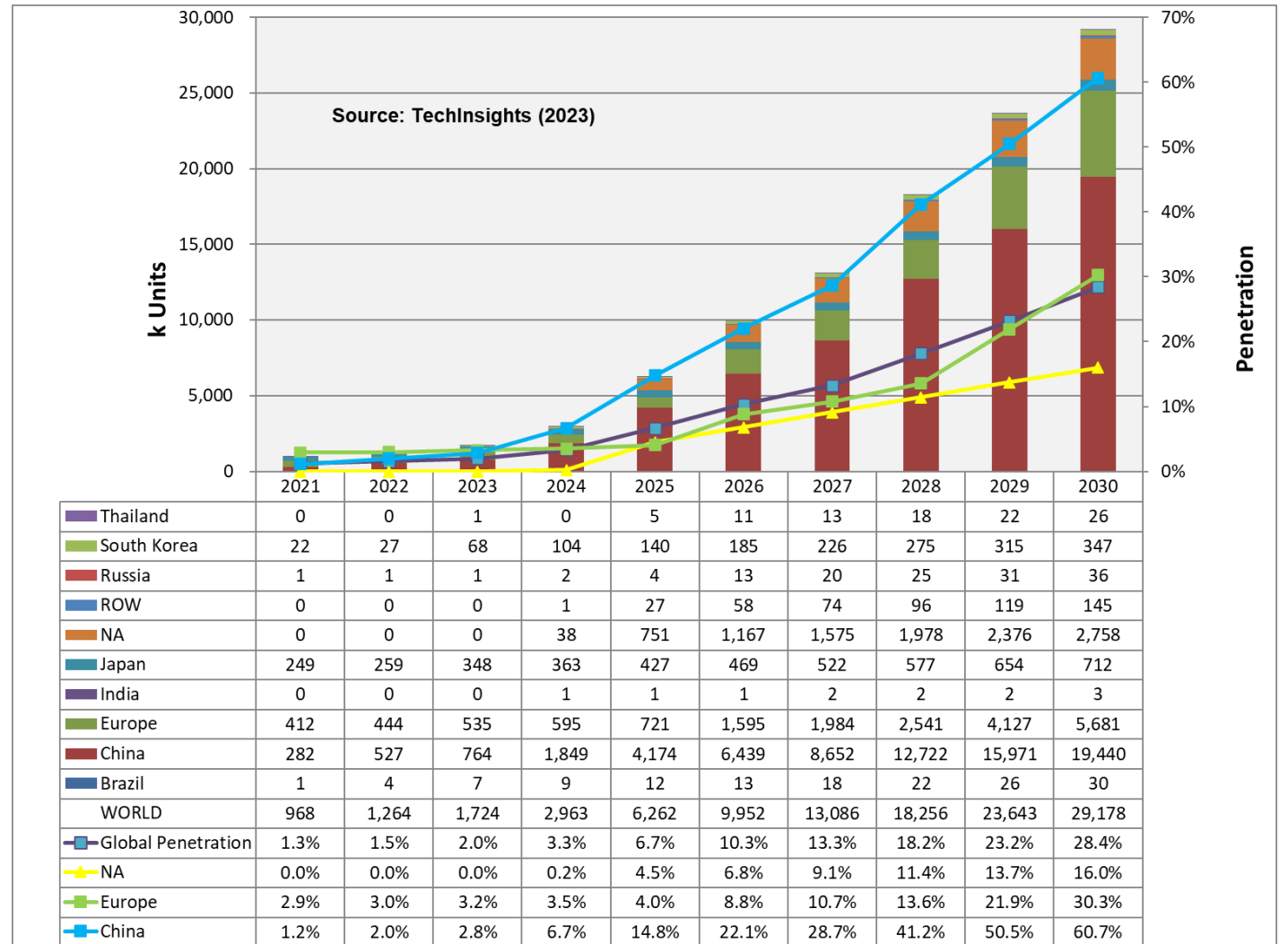# What do car companies want?

A. A single global connectivity platform
B. Best connection at all times
C. Carrier independence
D. Integration of vehicular and non-vehicular connectivity
E. Unlimited automotive wireless data plans
F. More reliable/comprehensive coverage
G. Prioritization of automotive (safety) applications
H. **NONE OF IT HAS ANY VALUE IF IT IS NOT SAVING LIVES!**

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V2X Forecast

- Forecast without EU or US mandate
  - 968k shipments in 2021 to 29.2M in 2030
  - C-V2X will dominate with 27M units vs. 1.2M DSRC shipments in 2030
  - Mandates in the works but timelines remain in flux
  - Without mandates, V2X will continue to flounder
- 90% of V2X deployments will be in China over the next 3-4 years
- V2X should follow closely with 5G implementation in vehicles – Ford in US?

Source: TechInsights (2023)

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Thailand	0	0	1	0	5	11	13	18	22	26
South Korea	22	27	68	104	140	185	226	275	315	347
Russia	1	1	1	2	4	13	20	25	31	36
ROW	0	0	0	1	27	58	74	96	119	145
NA	0	0	0	38	751	1,167	1,575	1,978	2,376	2,758
Japan	249	259	348	363	427	469	522	577	654	712
India	0	0	0	1	1	1	2	2	2	3
Europe	412	444	535	595	721	1,595	1,984	2,541	4,127	5,681
China	282	527	764	1,849	4,174	6,439	8,652	12,722	15,971	19,440
Brazil	1	4	7	9	12	13	18	22	26	30
WORLD	968	1,264	1,724	2,963	6,262	9,952	13,086	18,256	23,643	29,178
Global Penetration	1.3%	1.5%	2.0%	3.3%	6.7%	10.3%	13.3%	18.2%	23.2%	28.4%
NA	0.0%	0.0%	0.0%	0.2%	4.5%	6.8%	9.1%	11.4%	13.7%	16.0%
Europe	2.9%	3.0%	3.2%	3.5%	4.0%	8.8%	10.7%	13.6%	21.9%	30.3%
China	1.2%	2.0%	2.8%	6.7%	14.8%	22.1%	28.7%	41.2%	50.5%	60.7%

Automotive Embedded 5G Modem Shipments

Automotive 5G Shipments, Global

5G

Units in 000s

60000
50000
40000
30000
20000
10000
0

2022 2023 2024 2025 2026 2027 2028 2029 2030

Automotive 5G Shipments

TechInsights forecasts that shipments of systems with embedded 5G modems will increase from 562K units in 2022 to an estimated 52.7M units by 2030 at a CAGR of 76.3%.
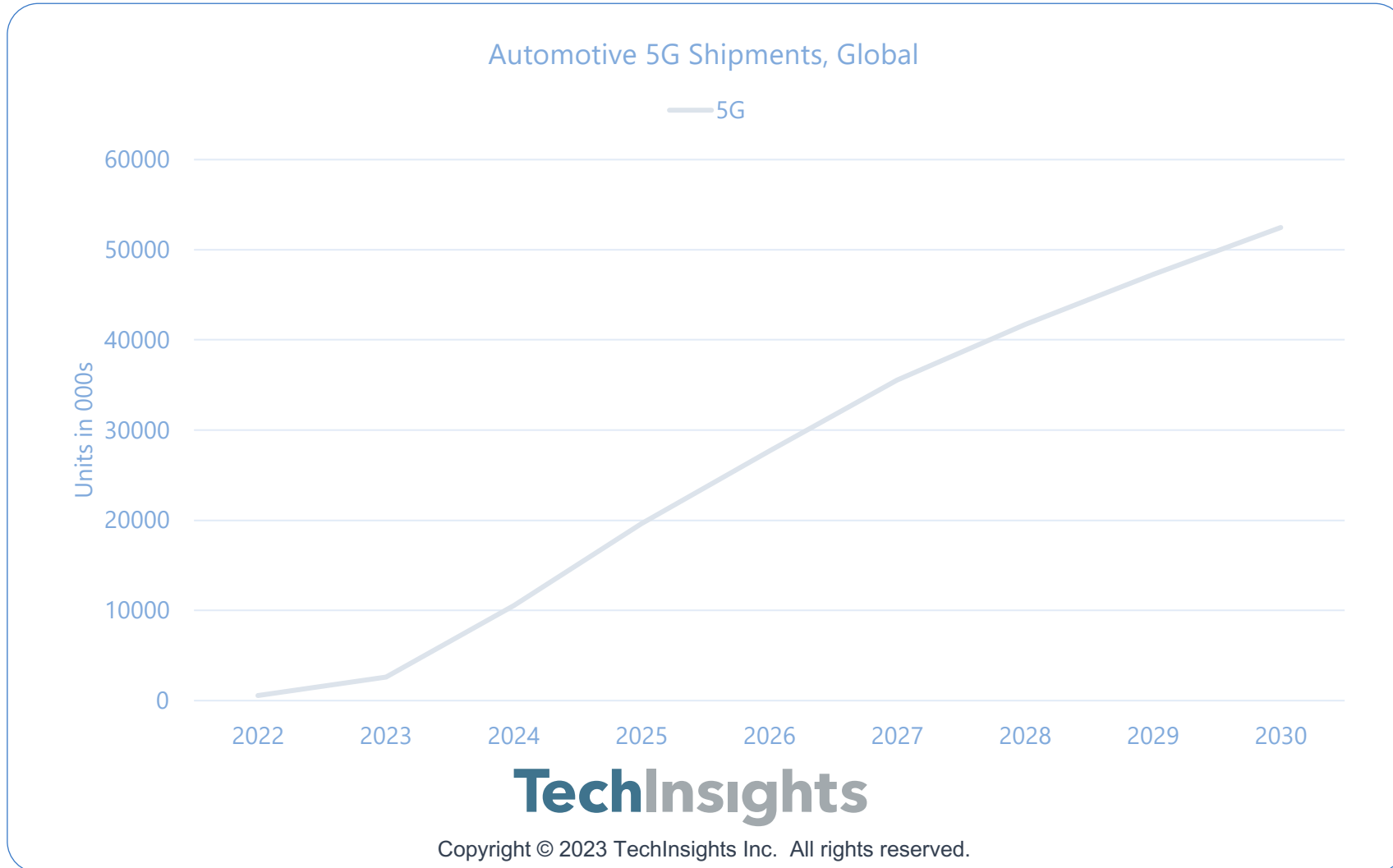
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What has Defined the Car?
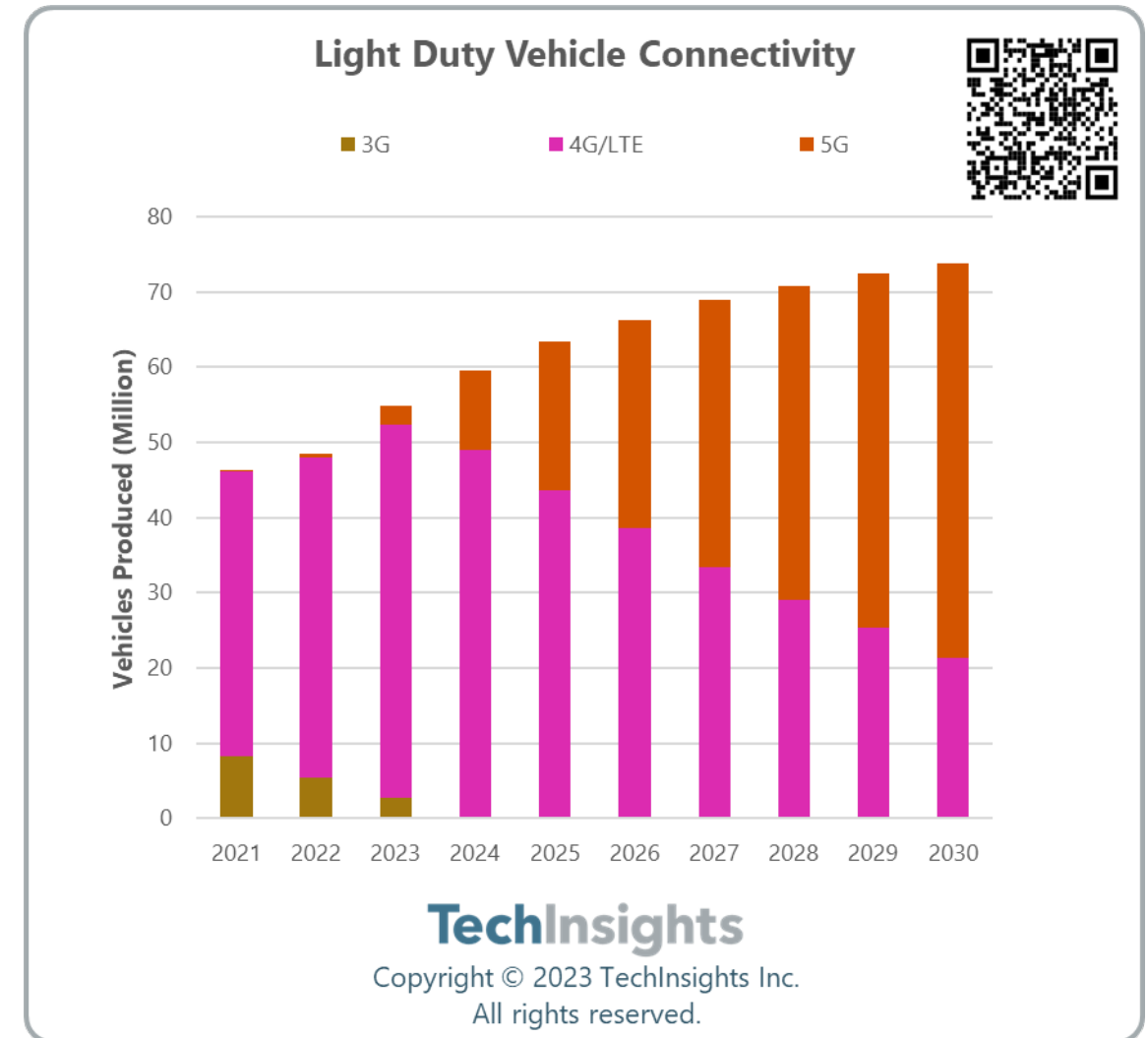
The Software-Defined Car is Built on Connectivity...

- Well over half of vehicle produced globally are now connected
- There is an increasing need for a **connection mediation gateway** capable of managing connectivity based on:
  - **Type**
    - Wi-Fi, LTE/5G, Satellite (LEO or GEO)
  - **Application**
    - Safety, streaming...
  - **Availability/Quality of signal**
    - Intermittent connectivity is a big problem for data uploads/downloads to vehicles in motion
  - **Cost**
    - Do I need this data transfer **now**? Or can it wait and be cheaper later on?

Light Duty Vehicle Connectivity

Legend: 3G, 4G/LTE, 5G

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Source: Automotive Infotainment & Telematics – Systems & Features Q3 2023

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Connectivity Means Safety

A. It is collision avoidance

B. It is emergency response to collisions

C. A car crash represents: the LOWEST point of customer satisfaction & the HIGHEST point of customer defection

D. What is the value of elaborate sensor portfolios and connectivity if we do not capture and transmit the data?

E. Data matters; Data saves lives

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Any Questions?

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Future Meetings

Date	Proposed Topic
May 2, 2024	Emergency Vehicle Crashes
June 6, 2024	On-Board Digital Alerting
July 11, 2024	Instantaneous 9-1-1 Notification and Computer-Aided Dispatch
August 1, 2024	Post 9-1-1 Computer-Aided Dispatch
September 5, 2024	Real-Time Crash Identification and Data Analytics

* Will define and kick-off a project in this timeframe

Connected Safety Birds of a Feather Working Group

All Members Meeting
April 17, 2024

- COVESA Connected Safety BoaF wiki page

https://wiki.covesa.global/display/WIK4/Connected+Safety+Birds+of+a+Feather

- Register at following link to join mailing list:

https://docs.google.com/forms/d/12jd9LGtOkQXjeiably2pdAli9RD1DBqJQxvGiKDSDNo/edit