DVN

Lidar

1st DVN Think Tank

February 21-22 Dorint Frankfurt Germany

Welcome and opening 1st Lidar Think Tank

Hector Fratty / Driving Vision News founder and CEO

Agenda: Kick off meeting, DVN Think Tank Lidar Community

21.2.2022	18:30 Welcome of Life Participants	
	19:00 Cocktail	
	20:00 Dinner	
22.2.2022	9.00 Welcome & opening	**HF**
	9:05 Introduction of Participants (Life & On line)	**All**
	9:30 Recap on DVN Lidar Activities & Ambitions of Lidar Community	**RS/LM**
	10:00 Communication: DVN Lidar Newsletter	**AS**
	10:15 General Q&A	**All**
	10:30 Coffee Break	
	11:00 Preliminary conclusions	**RS/LM/AS/All**
	11: 15 Working Groups (WG) about three Topics of Interest	

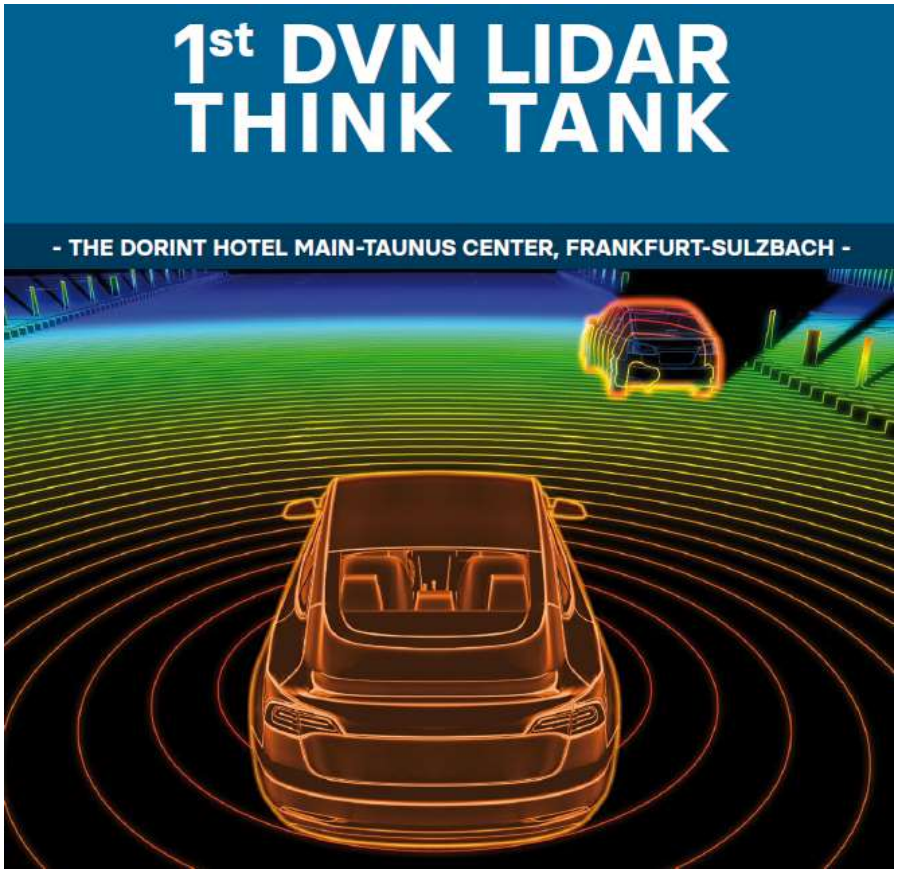
WG 1 : Benefits and Needs of a Co-operative Lidar Community (LM)

WG 2: (Industry) Standardization, Use Cases and Testing (AS)

WG 3: Promotion of Safety and Convenience Benefits of Lidar enabled Functions (RS)

	12:15 Lunch Break	
	!3:45 Reporting back of WG 1,2,3	
	14:45 Presentation: Standardization & Regulation in Automotive Lighting by former GTB president Geoffrey Draper	
	15:00 Way forward: Discussion and Suggestions	**All**
	16:00 Conclusions and Closure	**RS/LM/AS/HF**

Organised and moderated by DVN:
Alain Servel (AS), Hector Fratty (HF), Leo Metzemaekers (LM), Ralf Schäfer (RS)



First think tank participants

OEM

	Company	Participant(s)	
1	Stellantis	Matthieu Dabek, Guillaume Point	ONLINE
2	Ford	Peter Zegelaar	ONLINE
3	Volvo	Elias Marel	ONLINE
4	Hyundai	Achim Freiding	LIVE
5	NIO	Jordi Castells	LIVE
6	Renault	Li, You	ONLINE
7	Greatwall	Haipeng Jiang	ONLINE

T1 & Lidar Company

	Company	Participant(s)	
8	Valeo	Clément Nouvel	LIVE
9	Huawei	Ünsal Kabuk	LIVE
10	IBEO	Mario Brumm	LIVE
11	Cepton	Henri Haefner	LIVE
12	Blickfeld	Grégory Poillion	ONLINE
13	Aeye	Hod Finkelstein, Ove Salomonsson	ONLINE
14	Liangdao	Yang Ji, Rocardo Ferreira	ONLINE
15	Koito	Motohiro Komatsu, Keita Lizuka	ONLINE
16	Velodyne	Dieter Gabriel	LIVE
17	Mind	Naibo Wang	ONLINE

Research institutes

	Institute	Contact	
18	Fraunhofer IMS	Jennifer Ruskowski	LIVE

T2(+) Modules and Components

	Company	Contact	
19	Lumentum	Matthew Everett & Thomas Sommer	
20	AMS Osram	Clemens Hofmann	LIVE
21	Auer Lighting	Christian Paslick	LIVE

DVN team

Hector Fratty		ONLINE
Leo Metzemaekers		LIVE
Ralf Schäfer		LIVE
Alain Servel		LIVE
Geoffrey Lebrun		LIVE

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DVN
Lighting & ADAS

Why should lighting company join the DVN Community?

1 Learn

2 Promote

3 Network

The DVN Community of Lighting & ADAS is a unique opportunity for lighting company to be better known and to grow Business through:

DVN Technological watch on new emerging technologies, with:
- weekly newsletters (available in English and in Chinese) bringing news, analysis, and crucial information on innovation in lighting and ADAS.
- monthly technical reports with sharp focus on cutting edge technologies, regulations, congresses, auto shows.

DVN Promotion of innovations from DVN's 186 (and counting!) member companies—we facilitate the promulgation of knowledge of innovation, which in turn paves the way for commercialisation, enabling to build new relationships through DVN Community to forge new business worldwide.

DVN Workshops to meet high-level decision makers, researchers, innovators, practitioners, academics, and regulators to make new business connections with three workshops per year in rotating locations throughout America, Europe, and Asia.
DVN Workshops gather over 300 participants.

DVN Lidar

DVN
Driving Vision News

DVN Key Facts

DVN is a reference in the world of Lighting, Driver Assistance Systems, and Interior comfort.

15
Years

Founded by Hector Fratty, former Valeo Lighting Systems' chief of R&D.

186
Customers worldwide

186 Global Carmakers, Tier1 & Tier2 joined the DVN Community as GOLD members.
3 800 Linkedin followers.
500 WeChat members.

23
Consultants

DVN experts are former R&D Directors from Audi, Valeo...

160
Monthly reports

Over 7,500 articles news published on DVN Newsletters focused on the last automotive technologies and innovation.
1 Technological Study published per year since 2018.

20
Workshops

DVN organize 5 workshops per year:
• 3 DVN Lighting Workshops across the world,
• 1 DVN Interior Workshop,
• 1 LIDAR Conference.

Global Technological Watch in Lighting & driver assistance

Promote innovations towards your customers

Network with high level decision-makers **to forge new business**

DVN
Driving Vision News

THEY ALREADY TRUST DVN:

Car Makers

Aston Martin, UK
Audi, Germany
Bentley, UK
BMW, Germany
Daimler, Germany
Ferrari, Italy
Ford, USA, Germany
Geely, Germany
GM, USA
Harley Davidson, USA
Honda, Japan, USA
Hyundai Motor, Korea, Eur.
Jaguar-Land Rover, UK
Mitsubishi Motors, JP
Nio, China
Nissan, Japan, Europe, USA
Opel, Germany
PSA, France
Renault, France
Rivian, UK, USA
Shanghai-VW, China
Seat, Spain
Skoda, Czech Republic
Toyota, Japan, Europe, USA
SAIC Volkswagen, China
Volvo Cars, Sweden

System Suppliers and Tier 1s

DH Lighting, Korea
Elba, Romania
Farba, Turkey
Faurecia, France
Feka, Turkey,
Flex-N-gate, USA
GHSP, USA
Grakon, USA
Grupo Antolin, Spain, Germany
Hascovision, China
Hella, Germany
Ichikoh, Japan
J.W. Speaker, USA
Koito, Japan, Europe, USA
Lightworks, Germany
Lumax, India
Magna, USA, Austria, Italy
Marelli AL, Germany, USA
Mind Opto, China
Myotek Industries, USA
Mobis, Korea*
NAL, USA
Nordic Lights, Finland
Odelo, Germany
Plastic Omnium, France
SL Corporation, Korea
Stanley, Japan
Valeo, France, Spain,China
Varroc, Germany, Czech R.
Varroc TYC, China
Xingyu, China
Yanfeng, China
ZKW, Austria
Zodiac, France

Light Source Suppliers

ams OSRAM, Germany
Brightek, Taiwan
Diodes Dynamics, USA
Dominant Opto Tech., Malaysia
Everlight Electr., Taiwan, Germany
Excellence Opto, USA, DE, Taiwan
Huawei, PR China
LG Innotek, South Korea
Lumileds, Nederlands
Nichia, Japan
OLEDWorks, USA
Samsung LED, Korea
Seoul Semiconductor, Korea
Kyocera SLD Laser, USA
Tungsram, Hungary

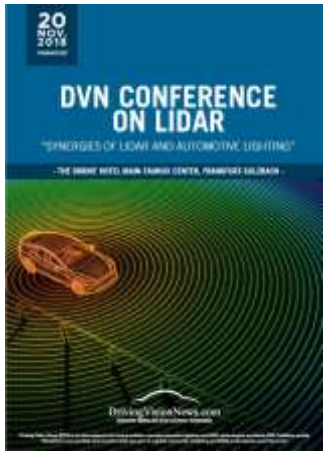
Univ., labs, Consultants

CEA Leti, France
Darmstadt university, Germany
DEKRA laboratory, Nederland
FEP, Franhaufer, Germany
Fudan university, China
Hannover Leibniz .(HOT), Germany
Institut d'Optique, France
IHS Markit, USA
Karlsruhe Lighting Institute, Ger.
LAB, France
Light Sight Safety, Belgium
Nuremberg university, Germany
Pacific Insight, USA
Parma university, Italy
Pforzheim, Germany
Rensselaer university, USA
SLD Laser, US
UMTRI, USA
University of California, US
YoungNam University, Korea

Tier 2s

3M, USA
Actasys, USA
Altran, Spain
AML Systems, France
Ansys, France
Aspöck Systems, Germany
ASYST Technologies, USA
Auer-Lighting, Germany
Bicomoptics, PR China
Bluebinaries, India, Germany
Bühler Alzenau, Germany
Covestro, US, China, Europe
Dajac, USA
DBM Reflex, Canada
Delo, Germany
DesignLED, UK
Docter Optics, Germany
Dow, Belgium
EcoGlass, Czech Republic
Elmos, Germany
ESS, USA
GXC Coatings, Germany
Holophane, France
IMS, Netherland
Infineon, Germany
Inova Semiconductors, Germany
Instrument Systems, Germany
Jokon, Germany
Keboda, China
Less, Switzerland
Liteon Technology, Taiwan
LMT, Germany, China
Luminus, USA
Mektec, Germany
Maxell Frontier, Japan
MD Molding, Portugal
Mitsubishi Electric, Germany, Japan
Muth Corp, USA
Nalux, Japan
NBHX Trim, Germany
NXP, UK
ON Semiconductor, Europe, Asia, US
Optoflux, Germany
Panasonic, Japan
Proper Group, USA
Sabic, USA
Sapphire, USA
Sea Link International, USA
Siemens, DE, USA
SMR Automotive, Australia
Sunny Optech, PR China
SUSS Micro Optics, Switzerland
Synopsys, USA, Germany
TactoTek, Finland
TechnoTeam, Germany
Texas Instruments, USA
Tongming, PR China
TQ Technology, Taiwan
Weidplas CH, Switzerland
WL Gore, USA
Yejia, China
Zollner, Germany
Zvision, China

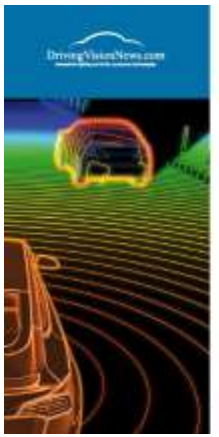
DVN Lidar



Recap: our journey started 4 years ago

March 2018 DVN launched the idea of the "DVN Automotive Lidar Conference" , our first conference took place in November 2018

"We bring together OEM's , the Lighting Industry and the Lidar industry "



Automotive LiDAR:
Hype or Must Have?

September 2019 DVN launched first study dedicated to automotive lidar

Since then, we kept organising the conferences on automotive Lidar, and this year in **November 2022** we will organise already our 5th conference.

February 2021 AND, encouraged by the enthusiasm at the conferences and our experience in automotive lighting: the idea was born to create a lidar community

In Q2 2022 we tested the water with stakeholders, followed with a GO on our community imitative at **November 2021**

Recap: stakeholders main findings (1)

1. We encountered a supportive attitude to our lidar community initiative of nearly all companies interviewed, and no one rejected our initiative.

2. It is very important to have a good mix of community members working together: the community has to be built along the supply chain. And, it will be a must have that OEM's will join.

3. Regional barriers could evolve due to geopolitical influences such as rules defined by different governments, data protection (including military restrictions), regulations, stimulations etc.

4. We have seen a different application and use case for passenger cars versus commercial vehicles like people movers and robo-taxis, and also a different use case for commercial vehicles like heavy trucks. We learned that the most pragmatic approach for the community would be to start with passenger cars in combination with lidar applications for ADAS, followed by autonomous driving.

Recap: stakeholders main findings (2)

5. University and (market) research institutes are welcome and they could contribute to establish public funding for research projects, furthermore some representation from autonomous driving specialists would also be appreciated.

6. The largest investments made on automotive lidar are done in: USA and China. Hence we need to bring those players in as well. China has the potential to adopt fast and in large volumes due to governmental initiatives linked to safety and accident reduction.

7. Automotive Lidar technology is in an embryonic stage and still developing, there are many companies acting, including start-ups, promoting a wide spectrum of different technological concepts. It is important for DVN to take a technological neutral position, and also take this position as much as possible in addressing topics.

Recap: Community feedback, main topics of interest (1)

Topic #1 : Networking Opportunity with Customers and Peers

- Develop common market view with Peers
- Find co-operation opportunities
- Overall target is to push introduction speed and adoption rate

Topic #2 : Technology Independent Consolidation of Functional Parameters

- Standardisation of functional specs for the different use cases
- Testing standards for the different use cases
- Reliability targets and endurance test specifications
- Eye safety standard consolidation
- Specifications for subsystems, components and their testing

Topic #3 : Promotion of Safety and Convenience Benefits

- Safety benefits through NCAP, IIHS, ADAC
- Convenience benefits like relieving driver stress
- Positive example “driver monitoring” from another field

Community feedback : main topics of interest (2)

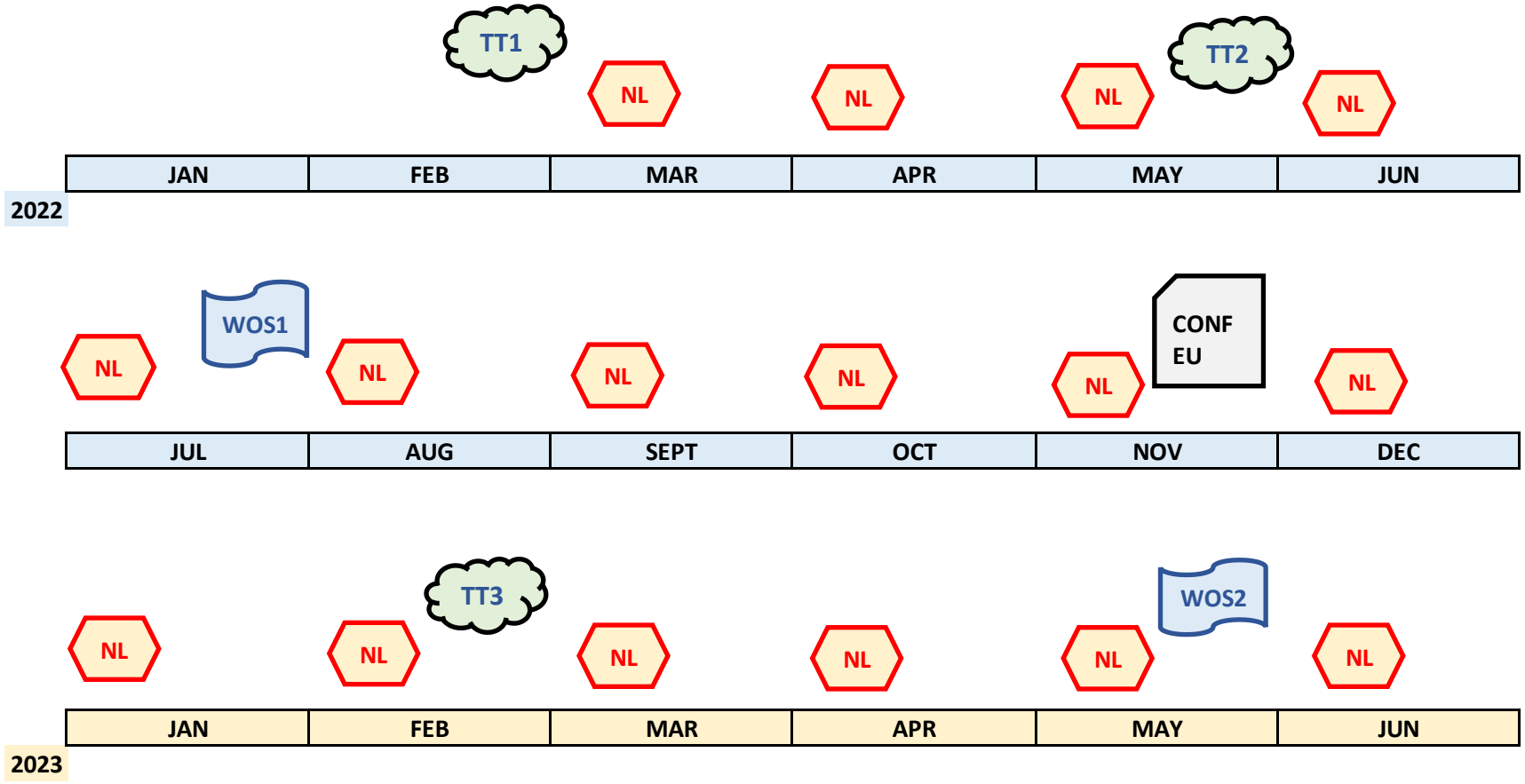
Topic #4 : Separation of “Noise” from “Relevant” Information

- Continuously a lot of communication is spread (“daily news”)
- No “objective” filters for relevance and validity of news
- Results are:
  - continuous internal “alignment” discussions
  - OEMs are getting uncertain which way to choose (“delay”)

Topic #5 : System Integration of Sensors

- Lidar has to function as part of a system
- Key point is choice of interface. Example point cloud only or pre-processed data
- Testing and release of the lidar module within the system

Recap: Community roadmap, draft example



Ambition (DRAFT)

YES

- Creating a leading communication platform between the industry value chain, test houses, research institutes and regulators
- Topics of interest are:
  - Use Case definition and testing
  - Promotion of Lidar applications along the value chain AND for the public
  - Exchange of thoughts and ideas
  - Nucleus for co-operation(s)
  - Others

May Be

- Acting as a neutral intermediate to NGOs, media etc.

NO

- Becoming a platform for standardization

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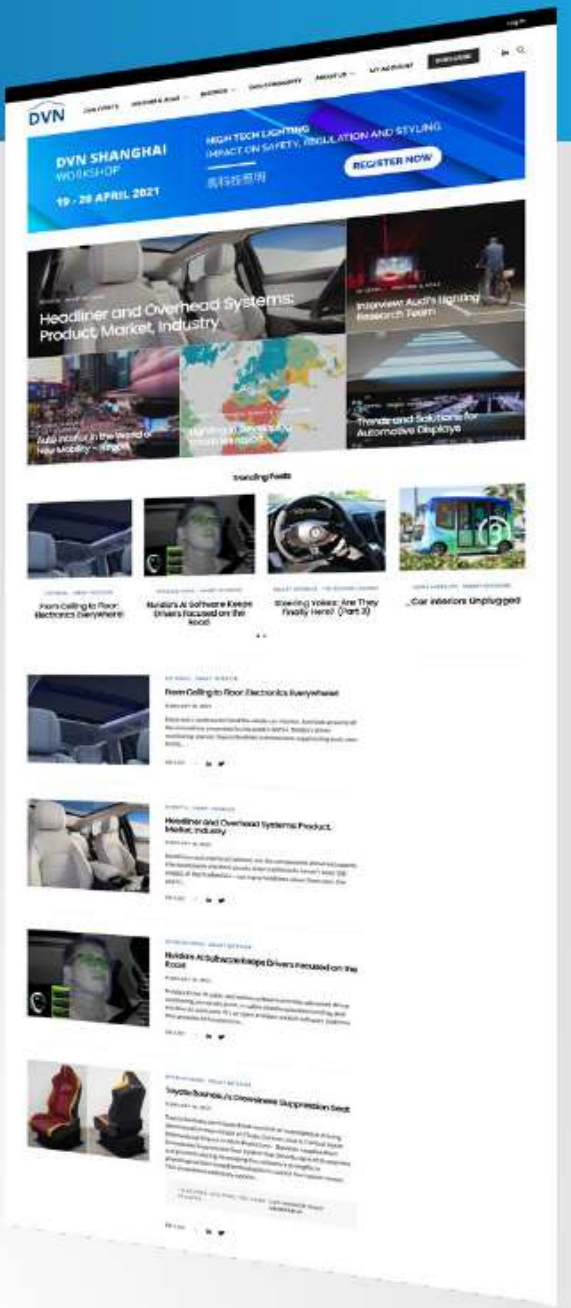
DVN Lidar

DVN LIDAR COMMUNITY NEWSLETTER

DVN brings together automotive lighting experts for many years through workshops and conferences in EU, US and Asia. Lighting activities are covered by newsletters, sent regularly to the more than 1,500 readers from 180 DVN member companies.



DrivingVisionNews.com

Tue, 4 January 2022 Weekly Newsletter NEWSLETTER #732

DVN Lidar Community Newsletter

In the context of our new Lidar Community, DVN proposes also a new monthly Newsletter which could be sent to members. This Newsletter will be targeted:

- **To be a platform to facilitate information and experiences sharing, about automotive Lidars between Lidar community members**
- **To share crucial information on innovation, cutting-edge technologies and market development on automotive Lidar**
- **To publish interviews on specific topics and actions performed by members**
- **To announce and report on DVN Lidar dedicated events and external events**

DVN Lidar Community Newsletter

This Newsletter will have the following structure:

- **Editorial.**
- **White papers on company profile, technology and standardization.**
- **Status of DVN community activities (reports on major events). New actions to engage. New DVN members.**
- **Latest news from the Lidar ecosystem.**

DVN Lidar Community Newsletter

Editorial:

The last Lidar conference in November 2021 highlighted the need to set up an Automotive Lidar community. Many participants expressed the need to share a platform for exchanges…….

DVN has therefore set up the last 22nd of February, a first Think Tank between several players wishing to participate in this Lidar community. This community is open to all industrial and research companies working in this sector…….

To report on the different activities or initiatives in relation with Lidar sensors, DVN proposes this monthly Newsletter addressed to Lidar community members…

The content of this Newsletter will have to be edited by the DVN team with the collaboration of Lidar Community members and potentially external entities.

Alain Servel

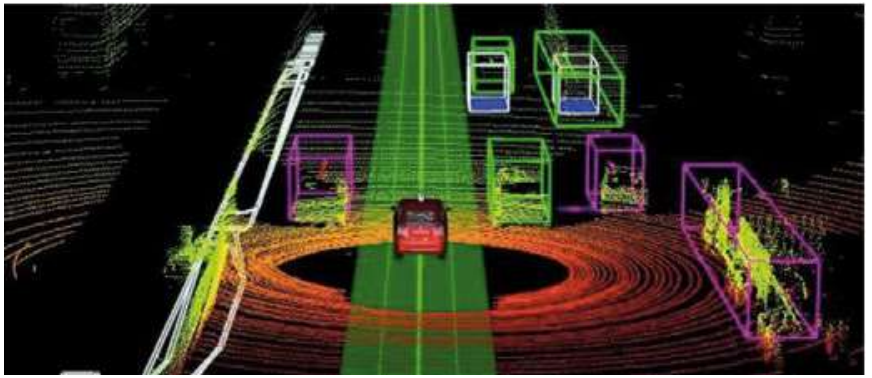
General editor, DVN Lidar

DVN Lidar Community Newsletter

A white paper on Automotive Lidar can be initiated

Based on inputs from DVN Lidar Community members:

- AD use cases, functional and system safety requirements
- State of the art of current Lidar technologies
- Functional requirements from OEMs
- Integration constraints from OEMs
- Initiatives/actions towards standards
  - On testing methods
  - On sensor specifications



DVN Lidar Community Newsletter

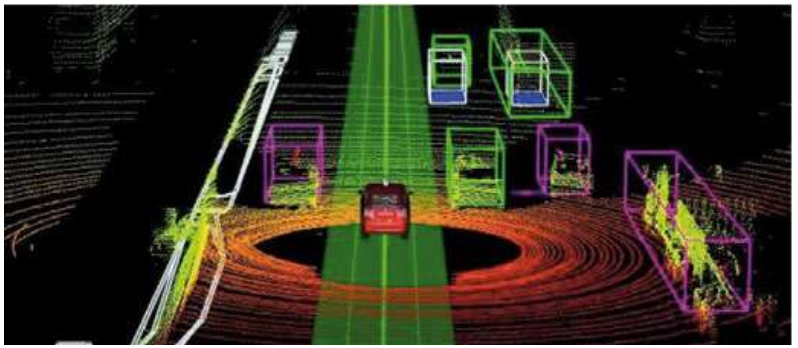
LIST of companies involved in the DVN Lidar community:

AD/ADAS sensors integrator, Lidar components supplier, OEMs, Testing, Research

Members:

OEMs	TIERs	Components
Greatwall	Aeye	AMS Osram
Hyunday	Cepton	Auer
Nio	Ibeo	
Renault	Koito	**Research**
Stellantis	Liangdao	Fraunhofer
Volvo	Mind	
	Valeo	

DRAFT LIST



New members and their Portfolio

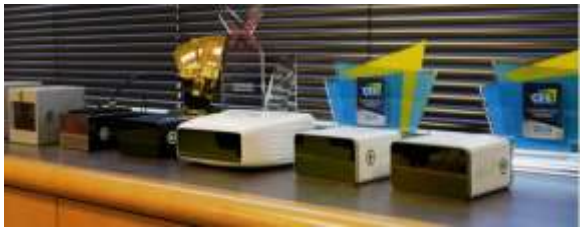
DVN Lidar Community Newsletter

DVN Lidar Community next events

2022 DVN Conference on Automotive Lidar

DVN Lidar Community Newsletter

Latest news:



Lidar sensors suppliers & OEMs co-developments

- **Founded in 2016 with a focus on lidars for ADAS in mass-market consumer vehicles, Cepton offers lidar sensors (near range to ultra-long range), automotive software and lidar perception solutions. Their lidars use our patented Micro Motion Technology (MMT®),**

Lidar components suppliers

EXAMPLE

- **Premstaetten, Austria, 27th January, 2022: ams OSRAM, a global leader in optical solutions, is expanding its partnership with Cepton Technologies (Cepton), a LiDAR innovator**

Research

DVN Lidar Community Newsletter

- What is your feedback ?

- What could be improved ?

General Q&A

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Preliminary conclusions

1. XXX
2. XXX
3. XXX

Note: for additional remarks see minutes of event

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Working groups (WG), break out 1 hour session

WG 1 : Benefits and needs of a co-operative lidar community (LM)

Members: Ford, Hyundai, Greatwall, Mind, AMS-Osram, Fraunhofer IMS, Blickfeld

WG 2: (Industry) Standardization, use cases and testing (AS)

Members: Stellantis, Renault, IBEO, Liangdao, Valeo, Auer Lighting, Velodyne

WG 3: Promotion of safety and convenience benefits of lidar enabled functions (RS)

Members: Volvo, Nio, Huawei, Aeye, Lumentum, Cepton, Koito

Working groups (WG), break out session

WG 1 : Benefits and Needs of a Co-operative Lidar Community

Ford	Peter Zegelaar	ONLINE
Hyundai	Achim Freiding	LIVE
Greatwall	Haipeng Jiang	ONLINE
Mind	Naibo Wang	ONLINE
AMS Osram	Clemens Hofmann	LIVE
Fraunhofer	Jennifer Ruskowski	LIVE
Blickfeld	Grégory Poillion	ONLINE
Moderator	Leo Metzemaekers	LIVE

WG 2: (Industry) Standardization, Use Cases and Testing

Stellantis	M. Dabek, G. Point	ONLINE
Renault	Li, You	ONLINE
IBEO	Mario Brumm	LIVE
Liangdao	Yang Ji, Rocardo Ferreira	ONLINE
Valeo	Clément Nouvel	LIVE
Auer Lighting	Christian Paslick	LIVE
Velodyne	Dieter Gabriel	LIVE
Moderator	Alain Servel	LIVE

WG 3: Promotion of Safety and Convenience Benefits of Lidar enabled Functions

Volvo	Elias Marel	ONLINE
NIO	Jordi Castells	LIVE
Huawei	Ünsal Kabuk	LIVE
Aeye	H. Finkelstein, O. Salomonsson	ONLINE
Cepton	Henri Haefner	LIVE
Lumentum	M. Everett, T. Sommer	
Koito	Motohiro Komatsu, Keita Lizuka	ONLINE
Moderator	Ralf Schäfer	LIVE

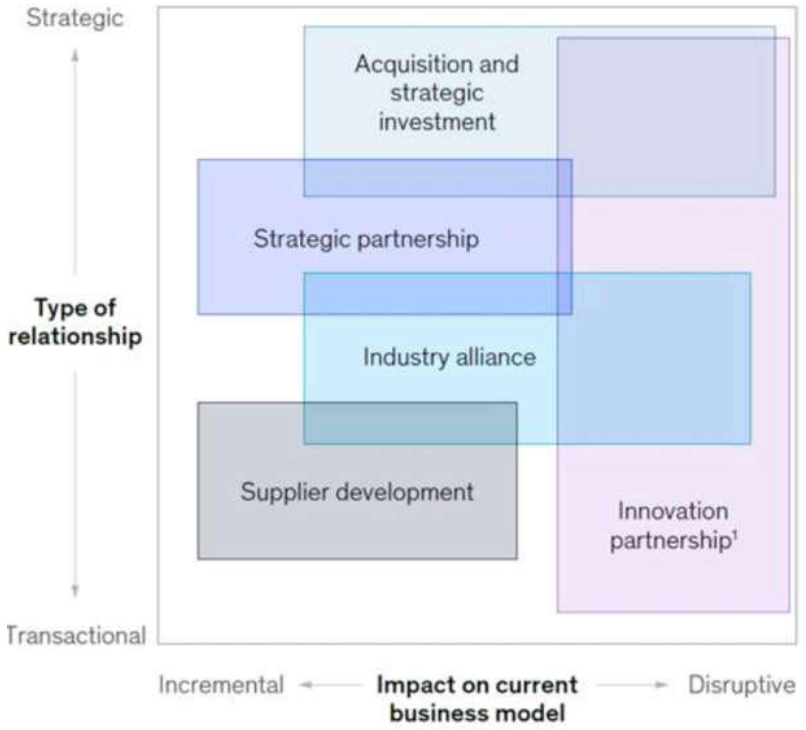
Working group1: Benefits and needs of a co-operative lidar community

Some general thoughts about one (of the many) business / industry transformation: individual model and collaborative model. **AS INTRODUCTION SLIDE TO THE TEAM**

- Learning and sharing in eco-systems vs non sharing in traditional competitive modus

On lidar:

- Not mature technology, no convergence (yet)
- No clear evaluation of performance
- Uncertainty due to many solutions, risk of slow/no adoption
- Risk sharing, mitigation
- Efficient use of resources
- Alliances across the value chain and at peers
- ……..



Working group1: team summary

Working group1: Benefits and needs of a co-operative Lidar community

Team summary for topics where a community is beneficial for finding solutions

1. What does LiDAR bring for the car?
    1. education: why are there so many systems? What are the ins and outs of the various systems.
    2. benefits: what benefits does the LiDAR bring to the car. Use cases where radar and camera fail, what are the LiDAR requirements what are the limitations
    3. regulation: use case without regulation does not make sense, need to shape it.
2. What is the difference to the Lighting community: LiDAR is new technology
    1. Many LiDAR companies with different level of “technological layer”: Whom to work with?
    2. Companies can find partners to offer higher part of technology layer
    3. How to compare performance claims of different LiDAR systems / technologies
    4. Align the chain of specifications, different languages within value chain – need translations
        1. OEM: Is there a bike next to the car? -> when to bring in software into community
        2. Tier 1: should I take mechanical mirror or MEMS?
        3. Tier 2: how many pixel should my SPAD have, what power should my EEL have

Working group2: (Industry) Standardization, use cases and testing

Q1 : What will be the most frequent use cases with need for Lidar in the next 3-5 years ? Are there local/regional/global differences ?

Q2 : Which initiatives/actions are necessary to establish a standard for definition and testing of use cases ?

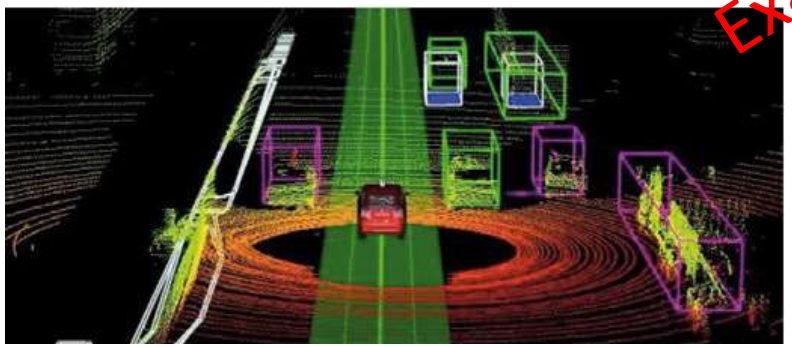
Q3: How could such initiatives be supported by the DVN Lidar Community ?

DVN Lidar TT1 WG2

Working Group 2: (Industry) Standardization, Use Cases and Testing

Automotive Lidars Use cases (next 3-5 years)

Traffic Jam Chauffeur (L2, L3 AD)
Highway chauffeur (L3 AD)



Motorways

Example

Urban AEB (pedestrians, cyclists, cars,…)
Low speed maneuvers

Urban scenarios

DVN Lidar TT1 WG2

Working Group 2: (Industry) Standardization, Use Cases and Testing

Automotive Lidars standard requirements / solutions

Lidar types	Frame /s	Resolution	FOV	Range Albedo < 10%	Availability	Laser source	Deflection	Detection	Integration (size)
LR	50	H: 0.5° V: 0.5°	H:60°, V:10°	>200m	>99%	EEL 905nm	MEMS	SPAD	
SR	50	H: 1° V:1°	H:150°, V:20°	> 50m	>99.9%	VECSEL 1550nm	Flash	ADP	

Example

OEMs Requirements

TIERs Technical solutions

Working group2: team summary

DVN Lidar TT1 WG2

Q1: What will be the most frequent use cases with need for Lidar in the next 3-5 years? Are there local/regional/global differences?

- Mobility needs
- What are the applications that will define H volumes of Lidars
  - Conditions are favorable. L3-L4 requirements determine where to invest
  - Next Regulations on AD will help
- Needs in term of safety (see NCAP requirements)
- City Traffic: Complex scenarios, obstacles can hide relevant targets. Cooperative sensing (ITS)
- Tesla accident could inspire

DVN Lidar TT1 WG2

Q2: Which initiatives/actions are necessary to establish a standard for definition and testing of use cases?

- No Common inputs currently. Necessity to have a common KPI ?
- Use case have to be standardized
- What type of data (point cloud or objects)
- OEMs in China wants more details in data out
- What is the role of Lidar in the context of sensors fusion
- OEMs need to be helped

DVN Lidar TT1 WG2

Q3: How could such initiatives be supported by the DVN Lidar Community ?

- For Which use case are there limitations (radars; cameras, lidars)
- Promote Lidar technology towards end-users

Working group3: Promotion of safety and convenience benefits of lidar enabled functions

Q1 : Which ADAS/AD functions (needing Lidar) represent most important safety or convenience benefits to be implemented in the next 3-5 years ?

Q2 : Which types of promotion of Lidar within this surrounding can be successful ?

Q3 : How could such promotion be supported by the DVN Lidar Community ?

Lidar Sensoren

Laserstrahlen sind sicherer als Radar

(Laser Beams are more safe than Radar)

Article published in journal “Eurotransport”

Promotion through specialist journals ??

IIHS Investigation into AEB effectivity in the dark

The details of the results showed that pedestrian AEB reduced the odds of a pedestrian crash by 32% in the daylight and 33% in areas with artificial lighting during dawn, dusk, and nighttime. However, in dark or unlighted areas, there was no difference in the odds of a nighttime pedestrian crash for vehicles equipped with and without the AEB crash avoidance technology.

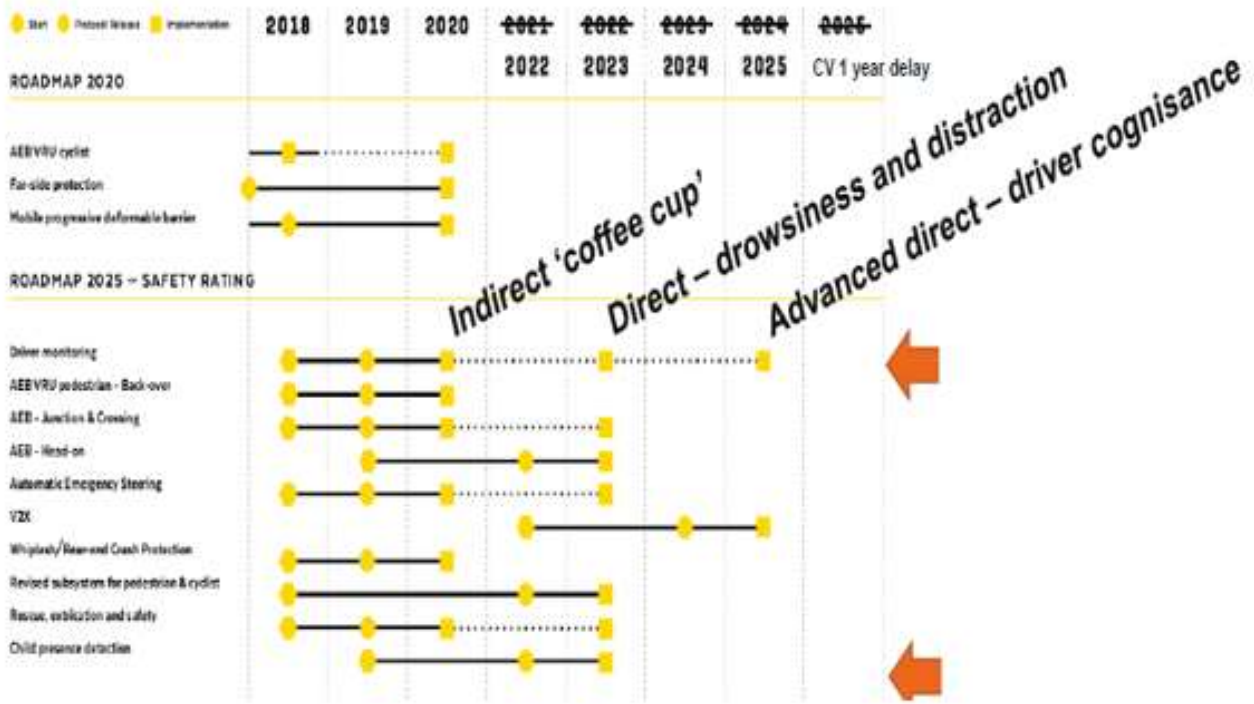
Similarly, pedestrian AEB was associated with a 32% reduction in the odds of a pedestrian crash on roads with speed limits of 25 mph or less, and a 34% reduction on roads with 30-35 mph limits. No reduction was found on roads with speed limits of 50 mph or higher, or when a vehicle was turning.

IIHS is already examining this issue beyond studying past crash data. Recently, Aylor's team conducted a series of research tests to help design the planned nighttime pedestrian AEB evaluation. Those tests provide additional evidence that today's pedestrian AEB systems don't work as well in the dark as they do in daylight.

Are such results an opportunity for Lidar ??

Driver Monitoring as an evolution example

Euro NCAP roadmap



NCAP request for three independent sensors ??

Working group3: team summary

Results of WG 3 clustered (I)

I have made an attempt to cluster your input/thoughts along below lines. The original input you find on the flip chart sheets below.

Promotion to Safety Organizations , Example NCAP, IIHS or similar

- Define real world testing conditions
- What are real world KPIs ? (General and help to define)
- Make targets more realistic
- Give input about use cases
- Example : ACC with sudden entrance of motorbike

Promotion to Public Media (“One Voice”)

- Common booth on motor shows like IAA
- Public professional awareness through conferences
- Invite influencers (e.g. ADAC and end users as a testimonial) to experience the benefits of Lidar

Results of WG 3 clustered (II)

End User Approach

- Address younger people as early adopters
- Address company cars as safety and convenience segment
- Education of end user about Lidar to create trust in ADAS/AD
- Convenience by visualizing (ADAS/AD) vehicle action to driver through Lidar enabled HMI

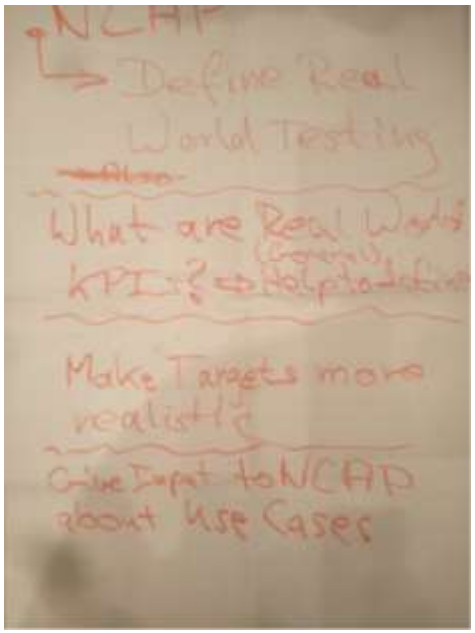
Styling/Appearance

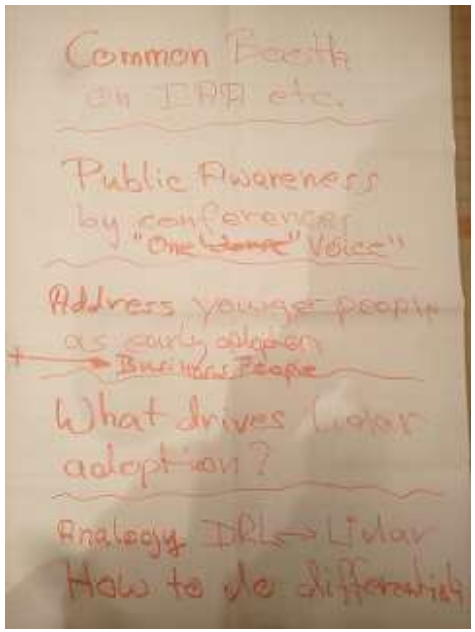
- How can Lidar be positioned as styling element ?
- " I own technology !! " as an adoption driver (China !!)

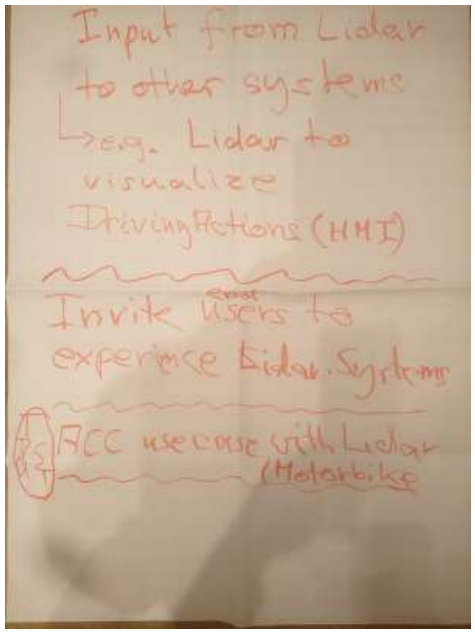
Miscellaneous

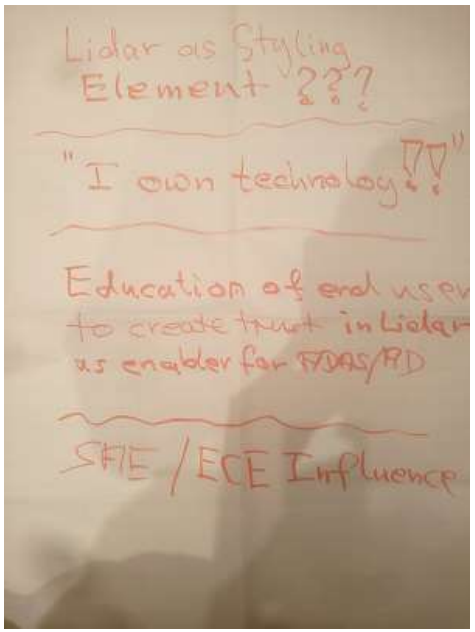
- Learn from DRL lighting adoption and project experience on potential Lidar adoption case
- In general : Which elements (technics, financial, safety, society) drive Lidar adoption for automotive ?

Flip Chart Sheets









9.00 Welcome & opening	**HF**
9:05 Introduction of Participants (Life & Virtual)	**All**
9:30 Recap on DVN Lidar Activities & Ambitions of Lidar Community	RS/LM
10:00 Communication: DVN Lidar Newsletter	**AS**
10:15 General Q&A	**All**
10:30 Coffee Break	
11:00 Preliminary conclusions	**RS/LM/AS/All**
11: 15 Working Groups about three Topics of Interest	
12:15 Lunch Break	
13:45 Reporting back of WG 1,2,3	
14:45 Presentation: Standardization & Regulation in Automotive Lighting by former GTB president Geoffrey Draper	
15:00 Way forward: Discussion and Suggestions	**All**
16:00 Conclusions and Closure	**RS/LM/AS/HF**

Report out working groups 1,2 and 3

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Presentation on standardization & Regulation

- Presentation on standardization & regulation
- Pre-recorded, by Geoff Draper / former GTB President

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Way forward: discussion and suggestions (plenary)

Note: for additional remarks see minutes of event

Closure

Thank you, we look forward to continue our joint activities

--- DVN team ---