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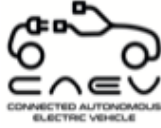
Connected Autonomous Electric Vehicle (CAEV™) Consortium Round Table, Sep 12 2018

Background

The trillion dollar a year automotive industry, after a century of its existence, is undergoing a radical and transformative change as a result of technologies that enable a vehicle to be fueled by electricity, be driven autonomously, to be Internet connected and be precisely located and tracked as it transports people or assets to its destination. This is resulting in the transportation sector being turned upside down with car owners, especially from the millennial generation, opting to use shared transportation network services such as Uber or Lyft in lieu of vehicle ownership. To get passengers to and from their last mile of destination, transportation sector is seeing yet a further level of innovation with the advent of micro-ride network services such as Bird, whose riders can connect to an Uber, Lyft, Bus or Transit service for their longer range travel needs. Buses themselves are now becoming increasingly electrified especially in densely populated urban areas - which society is demanding by way of their regulators for the purpose of reducing greenhouse gases.

In addition to people movement, the fundamentals of transporting assets and goods are also being upended. Services such as Uber eats are delivering fully prepared meals economically to consumers as and when they want them. On the other hand, transportation of goods such as those shipped from China in 40 foot containers and arriving into the port of Long Beach/Los Angeles will in the future be performed by electric trucks instead of diesel-based trucks. We are seeing the early prototypes of electric trucks that would soon become autonomous and be able to deliver goods to their destination - without the need for a driver and without adding to greenhouse gases.

The automotive industry a decade from now will look nothing like what it is today and California has quickly embraced this change in the last decade, rapidly developing



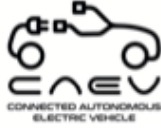
strong research capabilities in its universities, creating a strong technological base with innovative startups such as Tesla - now a poster child for the EV industry worldwide, and moving aggressively with clean transportation friendly policies. Los Angeles, being one of the world's largest car markets, having one of the the largest ports receiving shipments, and, having a rapidly growing high-tech hub by way of Silicon Beach and Los Angeles Cleantech Incubator, forms an excellent testbed for research and development. UCLA, being based in Los Angeles, is well positioned to make an impact on this industry with its research leadership by faculty, scientific researchers and students, in electric vehicles, transportation, smart grids, and, clean energy. Also, UCLA has a strong track record of innovation and commercialization having recently been ranked first by the Milken Institute among all universities in the country for generating startups. Last, but perhaps most importantly, our students are some of the brightest and extremely innovative with many of them having participated in the creation of the high-tech startup corridor of Silicon Beach here in Los Angeles and it is the with the help of organizations such as yours - CAEV™ members/partners - that we would be able create educational and learning programs that further the needs of this industry - your industry - so as to prepare our students for life-long learning.

Finally, with the help of CAEV™ partners, we would like to drive research and technology development in UCLA and our partners via collaborative thought leadership that would need to bring together academics, industry and government to come up with the creative and groundbreaking innovations necessary for this sector to grow, attract new talent into the field, find capital for the innovations to succeed and create new markets that are not even being imagined today.

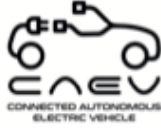
AGENDA

In response to the challenges and opportunities, on Wednesday, September 12, 2018, UCLA's CAEV™ Consortium held its **Executive Leadership Round Table** kickoff meeting with representation from a diverse set of organizations. The agenda, that lasted from 4pm to 9pm, was as follows:

- 4 00 - 5 00 pm - Tour of CAEV™ Research facilities, testbed and labs. Demonstration of smart EV charging, PV-EV-Battery Integration testbed, Autonomous electric vehicle prototype research, V2V communications research and the UCLA Smart Grid Lab.
- 5 00 – 5 45 pm – Registration, Networking and Informal gathering
- 5 45 - 6 00 pm - Welcome and presentation by Dean of Samueli School of Engineering, Dr. Jayathi Murthy
- 6 00 – 8 00 pm – Round Table, Confirmed/registered guests included:



- Henrik Fisker, Chairman Fisker Inc.
 - Ivan Todorov, VP Digital Strategy, Fisker Inc.
 - Martin Welch, VP Engineering, Fisker Inc.
 - Stefan Krause, CEO EVELOZCITY
 - Eric Mika, Government and Corporate Affairs, EVELOZCITY
 - Paul Balciunas, In-Charge of Investor Relations, Business Development & Strategy, EVELOZCITY
 - Bryan Hansel, CEO Chanje
 - Leon Kaunitz, Director, NIO
 - Dakota Semler, CEO Thor Trucks
 - Jeremy Snyder, Until recently - Tesla, Head of Global Business Development & Special Projects
 - Joe Slenzak, Director, Robert Bosch LLC
 - Katie Sloan, Director, Transportation Electrification, Southern California Edison
 - Dale Thompson, Los Angeles Department of Water and Power
 - Benjamin Richards, Burbank Transportation Commission
 - Michelle Bogen, BMW Group, Research, New Technologies, Innovations
 - Kurt Cornell, Mercedes-Benz, Head of Electric Vehicles and Mobility Solutions
 - Michael Groene, Director EE Engineering New Vehicle Platform at Karma Automotive LLC
 - Todd Petersen, LADOT
 - Andrea Linder, Porsche Motor sport
 - Sugam Arora, Lyft
 - Carley Markovitz, Transportation & Land Use Planning at AECOM
 - Bob Bao, Board member, BAIC
 - Esther Kimm, Chief People Officer Independent Electric Vehicles
 - Marian Petrelecan, Head of Vehicle Engineering, Independent Electric Vehicles
 - Nicolas Letendre, CEO, Letenda Inc.
 - Emad Fakhoury, CEO, Phoenix Motors
 - Jose Paul Plackal, Director, Pheonix Motors
 - Dr. Geeta Fisker, President & CFO, Fisker Inc.
 - Brad Carson, Director, Complete Coach Works
- 8 00 – 8 30 pm, Presentation of current and planned activities by UCLA CAEV™ Director, Prof. Rajit Gadh; Topics:
- 10-year history of EV research at UCLA
 - History of funded projects at UCLA and update on current projects
 - \$120M Smart Grid Demonstration Project with LADWP – EV, PV, storage



- CEC project in SCE territory – EV, V2G, DC Fast charging for EV, Storage, PV, microgrid.
- CAEV™ Projects launched – EV/AV in UCLA with internet connectivity, prototype developed.
- Testbed plan for wireless charging and DCFC at UCLA and other partnering local entities
- User studies for last mile of transportation with shared networks such as Uber/Lyft, their electrification and eScooters such as Bird.
- Cybersecurity of EV charging infrastructure
 - Pilot with EV/AV prototype on UCLA campus
 - Workshops and conferences planned for upcoming year
 - Industry and government engagement planning
 - Planning for curriculum, education and student involvement for the industry
- 8 30 pm – 9 pm. Discussion, recommendations and closing

Meeting Notes

- **6:00 pm opening by Prof. Gadh**

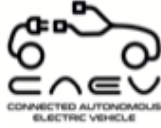
Kicked off event. Mentioned that LA Mayor Eric Garcetti hosted Clean transportation forum on 9/11/2018. LA is a key city for EVs. LA and California will be spending significant resources in the EV space. Introduced the mission and vision of CAEV™.

- **6:10 pm welcome and brief introduction by the dean of UCLA Samueli school of engineering, Dr. Jayathi Murthy**

UCLA School of Engineering is growing. Currently, we have about 225 faculties and 6500 students. It's also very competitive to get into the UCLA engineering school. We received around 26,000 applications this year, picked 1,800 among them and 980 applicants finally got accepted. Also, compared to 10 years ago when women were only 16% of the engineering community, they are at 31% this year which is an exciting change. We keep investing and hiring people aiming at six critical areas of research: Robotics and Cyber-Physical Systems, Sustainable and Resilient Urban Systems, Engineering in Medicine, AI and Machine Learning, Cybersecurity and Future Internet, and Advanced Materials and Manufacturing. So, with investments and many good students coming in, and hopefully with the CAEV™ consortium bringing the complexity into our world, we can galvanize the next generation of global change agents.

- **6:15 - 8:00 pm roundtable discussion**

With moderation from Dr. Gadh, the participants of the round table provided the following input:



Eric Mika, Government, and Corporate Affairs, EVELOZCITY

As the number of EVs is increasing to hit 1.5 million zero-emission vehicles on the road by 2025 in California, the mission of Evelozcity is to design, develop & deliver competitive, capable and connected electric cars for urban needs. However, there is no standard for EV communications and the related policy by the government is inappropriate due to a lack of back and forth conversation. Thus, it's time to work together to create the future of connected autonomous electric transportation industry. Currently, we are not yet an industry, we are a group of business companies, only through collaboration can we become an industry.

Henrik Fisker, Chairman Fisker Inc.

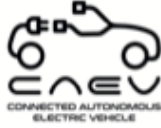
Due to the electrification of the vehicle, there is a need to redefine mobility and the rule of regulation. We need to design the EV for a specific purpose because the over-engineered product, which is expensive, will not work. In the future of transportation, the number of private cars will decrease and public vehicles such as EV shuttles, electric scooters (Bird), will increase. In order to design the specific purpose EV and excite people to buy EV, we need to understand the interaction of people and transportation by collecting data and figuring out how people perceive the car in the future.

Leon Kaunitz, Director, Director of Body, Structural Engineering and Advanced Technology as NextEV/NIO,

It's been an amazing time for EVs, especially in LA, and in California. In the past, there were several small and ugly designed EVs due to the electrification. People started to think, "why should they look like that?" The "pioneers" of the new electric vehicles were Tesla and Fisker (very aerodynamic/stylish and "good looking" vehicles). We specialize in research, development, design, and engineering of EVs focused in satisfying the customer's needs. Currently the automotive industry is going through a significant change and development with the main driving factors being electrification, autonomous drive, connected vehicle and, in general, introduction of artificial intelligence. These factors have a significant effect and are changing even the traditional automotive design (vehicle architecture, body, structure, interior, etc.). Engineers and customers may have different perspectives of the EVs development; there is a need to integrate those by education, teaching, and training of the emerging technologies.

Dakota Semler, CEO Thor Trucks

We are a Los Angeles-based transportation lab making electric commercial vehicle fleets a reality. There are several benefits to electrify trucks, and the most significant one is to reduce the emission since the transportation emission segment is enormous.



Dale Thompson, LADWP

EVs have changed a lot over time, not only with respect to appearances or driving range, but they also changed our world and the grid. EVs also bring opportunities for grid services. LADWP has supported not only the infrastructure installation but also research on grid issues such as solar duck curve problem. V2G is a key technology for grid service. Nowadays, EV is the trend as coal is not as cheap anymore. We need more young engineers to come in with new ideas for a better EV future.

Carley Markovitz, Transportation & Land Use Planning at AECOM (representing Kelli Bernard, Chief Executive, LA Metro+, DCS Americas)

There are a lot of emerging technologies in EV transportation. As policy space can shape the future benefits to the society, we help to define the OEM policy to inform decision making.

Todd Petersen, LADOT

LADOT provides sources, infrastructure, and transportation data, which can be accessed through the City of Los Angeles API. Such resources can be beneficial for future EV transportation design and planning.

Jeremy Snyder, Previously - Tesla, Head of Global Business Development & Special Projects

Sales marketing strategies can be very different based on different cultures, but the common thing is to make things easy. For example, during Tesla marketing in New York Manhattan in 2007, our goal was to locate enough charging stations so that people don't need to walk more than three blocks to find one. We made it, and the sales increased! Currently, most of the EV users can charge their EV at home to retrieve the energy. However, what if people need to park the vehicle on the street? How to excite them to shift to EV? There is a need for open EV charging infrastructures.

Benjamin Richards, General Motors

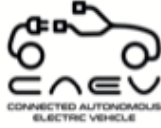
Infrastructure need is paramount and so are issues such as traffic congestion and pedestrian safety concern, that require a redesign of the road and transportation systems. Education concerning new technologies is critical.

Andrea Linder, Porsche Motorsport

There is a need for market research and analysis to achieve full electric car development that satisfies customers' needs and to ensure sales growth in the future.

Jose Paul Plackal, Director, Phoenix Motors

The issue for EV in the fleet and transit markets is still the cost. That's a problem we try to solve.



Esther Kimm, Chief People Officer Independent Electric Vehicles

People are usually afraid to change. There is a need to educate and figure out a way to excite people to change. Collaboration is important at this time, and we need to partner with others to achieve the future AEV transportation.

Nicolas Letendre, CEO, Letenda Inc.

There is a need for management that engages AI and machine learning to achieve the optimal accessibility, operation, and maintenance of electric transportation platform and to meet customer satisfaction. Energy management and charging infrastructure is always challenging for commercial electric vehicle projects. CAEV™ could also potentially help to address the question of battery end-of-life and recycling.

Jeff Joyner, advisor, US-China Clean Tech Center

The development of EV has shown its progress, as the history can tell from General Motors EV1 to AEV. Now we have all the resources: engineers, industries, and research/education in universities. Now is the time to work together to integrate all of the resources and make things happen.

Michelle Bogen, BMW Group, Research, New Technologies, Innovations

We have launched many research programs and collaborated with utilities aiming to shift the charging load. The big issue is that although there is a benefit/incentive to encourage charging behavior change, some people don't change because there is no access to the infrastructure. Therefore, infrastructure is an urgent need.

Potential action Items from Meeting

1. Ask attendees what would be their top three reasons to join CAEV™
2. Expand membership drive with help of UCLA External and Corporate Relations
3. Come up with strategy to inform and educate the Government representatives in Washington – request input from participants to put together this plan
4. Plan a high-level round table event
5. Present pilot projects to participants and get their feedback. Initial projects:
 - a. Advanced EV charging with open bi-directional protocols
 - b. LA Olympics pilot project
 - c. Autonomous Electric Vehicle Demonstration Plan in UCLA Testbed
6. Propose 3-4 initial committees within the board and their responsibilities.
Propose deliverable and schedule for each? Potentials discussed were:
 - a. Government and Public Information Committee
 - b. Pilot and Regional Demonstration Committee
 - c. Curriculum, education and student recruitment Committee

- d. Open Vehicle Grid Integration Committee
7. Modern automotive curriculum focused on training of undergrads and grads at UCLA
8. Meet with some of the companies on an individual basis and give seminar as required
9. Confirm date and theme of CAEV regional conference
10. Plan out a demonstration in public infrastructure with LADOT comment.

APPENDIX

Pictures from the event:



Fig.1 Henrik Fisker, Rajit Gadh, Martin Welch, Jayathi Murthy, Marian Petrelecan and Dakota Semler (from left to the right)



Fig.2 Opening by Prof. Gadh



Fig.3 Welcome and brief introduction by the Dean of UCLA Samueli school of Engineering, Dr. Jayathi Murthy



Fig.4 Eric Mika, Government, and Corporate Affairs, EVELOZCITY, Presents Perspective on Industry



Fig.5 Henrik Fisker, Chairman of Fisker Inc. gives historical and future perspectives



Fig.6 Leon Kaunitz, Director, Director of Body, Structural Engineering and Advanced Technology as NextEV/NIO presents at round table



Fig.7 CAEV™ presentation by Prof. Gadh



Fig.8 Dakota Semler, CEO Thor Trucks presents benefits of electric trucks



Fig.9 Dale Thompson, Engineer at LADWP gives historical perspective



Fig.10 Todd Petersen, LADOT discusses importance of smart infrastructure

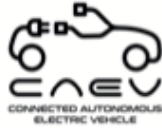


Fig.11 Andrea Linder, Porsche Motorsport talks about customer issues. Dr. Peter Chu of UCLA (second from the left) listens intently



Fig.12 PhD Students from SMERC-CAEV™ UCLA, Yu-Wei Chung (left) and Behnam Khaki (right) listen to experts and want to change the industry



Fig.13 Prof. Rajit Gadh (left) and Henrik Fisker, Chairman of Fisker Inc. (right) pose for the camera