

SMARTER PERSPECTIVE: MOBILITY

The Zero-Emissions Mindset and the Flow of Capital in the Mobility Space

By the Hilco Mobility Team

This is the third article in our mobility series. Here we examine the flow of capital investment toward electric and mobility-focused innovations and how resources are being re-directed and refocused for the future.

NET-ZERO GOES BEYOND EMISSIONS

The net-zero transition is well underway. As part of the larger transformation taking place in the automotive and broader mobility market, the concept of net-zero has expanded beyond zero emissions goals. As Kent Helfrich, Chief Technology Officer, President GM Ventures, VP Global R&D at General Motors, said during an October 2022 panel presentation, “At GM, we really believe in a future of zero crashes, zero emissions and zero congestion.” That’s a lot of zeros, and it most certainly suggests a future that will look very different than the present.

The path to zero emissions, in and of itself, has attracted billions in investment. Every major auto manufacturer has an electrification plan, and most have set very aggressive targets over the coming 5-10 years. More than a few have even committed



to all-electric production by as early as 2030. When the other net zero targets, such as crashes and congestion are included, the investment pool expands dramatically to include autonomous vehicles, new public, pooled and shared transportation concepts, congestion and traffic management tools, as well as cutting-edge mobility technologies and platforms that will debut over the next several years.

In the transportation arena, road vehicles are by far the biggest contributors to greenhouse gas emissions. In fact, tailpipe emissions from cars, trucks, and other road vehicles make up about 75% of all

transportation related emissions, so the bulk of research and development right now is focused there. With market dynamics shifting, and net-zero targets being codified by governments around the world, significant financial resources have poured into mobility-driven emission reducing innovations. The global mobility market is expected “to reach \$454.4 billion by 2028, rising at a [compound annual] market growth rate of 15.4% from 2022-2028.”

As noted in our previous articles, many incumbent auto manufacturers and suppliers have been slow to transition. They are competing with a growing number of electric-only manufacturers,

as well as a host of technology start-ups. Both of these groups are laser focused on the development of connected, autonomous, shared mobility vehicles and transportation methods that will eventually replace internal combustion engine (ICE) cars and trucks. It is estimated that up to 50% of current ICE componentry could become obsolete over the course of the transition to electric vehicles. ICE cars and trucks will be on the road for a while to come, but the future is clearly in zero emissions.

WHAT'S MOVING THE NEEDLE?

For many in the environmental community, the path to this critical juncture has taken an interminably long time. For others involved in the manufacture of ICE autos, it may seem a little abrupt. Regardless, we have reached an inflection point where a convergence of factors is accelerating the pace of the race to net-zero.

One of the key factors driving the ramp-up of investment in the mobility sector is consumer pressure. Demand for greater safety and convenience helped move the needle initially, but a real sea change in the consumer mindset has come to bear. Enough consumers now seem to believe the net-zero targets are realistic and reachable, and that achieving them is imperative for the health and long-term survival of the planet.

Regulators and policy makers are taking firm positions on zero emissions targets. Using a combination of requirements and incentives, policy makers are creating an environment that is ripe for new innovators as well as evolving industry incumbents who are willing to commit the necessary resources and shift to foster a net-zero culture. Collectively, this momentum appears to have made investors more comfortable and confident in placing long-term bets in the market.

MONEY TALKS: EVOLVE TO SURVIVE

Mobility has attracted sizable investment over the last ten years, with almost \$100 billion flowing in since the start of 2020 alone. A number of incumbent manufacturers and large suppliers have also announced and executed on plans to restructure, spin-off, create new business units, sell-off existing divisions, or acquire new companies that will help reposition them for the net-zero marketplace. This shedding and redressing can be expected to continue throughout much of the current decade.

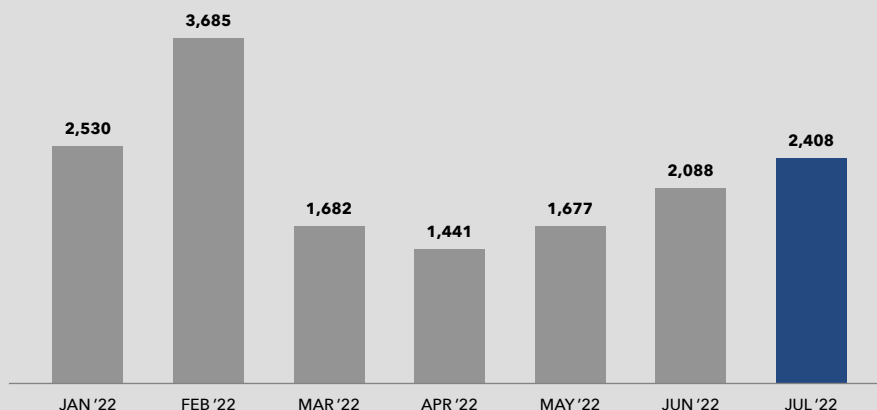
Most mobility technology development and deployment is less capital intensive than traditional auto manufacturing development, which has helped mobility-only companies attract substantial venture capital for start-up and mid-stage funding rounds. Mobility Innovation Labs of Toronto, Canada tracks venture capital investment in the mobility space and reports on it monthly. Through the first seven months of 2022, over \$15 billion was invested. While total investment in the mobility sector slowed in 2022 as compared with 2021, the pace is still brisk, and the interest is high when you consider the breadth of technologies and the

number of companies, old and new, betting on the success of the mobility space.

Take for example, GM Ventures, which has invested millions and is committed to continue doing so in order to reach its lofty net-zero goals. The GM Ventures portfolio now includes over 50 companies, a majority of which operate in the mobility space. These businesses are developing technologies that range from multi-distance holographic augmented reality for automotive heads-up displays (Envisics), and high energy "anode-free" lithium metal battery technology (SES), to on-demand vehicle fueling, wash and maintenance services (Yoshi).

Investment in the mobility space is coming from other big names like Apple, Google and Sony as well. Based on Apple's preview of the next generation CarPlay at the 2022 Worldwide Developers Conference in June, it is clear the technology giant is keen on capturing more market share of the functions, screens, controls and instruments in as many cars as possible, in addition to developing its own autonomous vehicle. Sony is also getting into the EV space. According to Hotcars,

VC Funding in Mobility Startups (\$ million)



Source: Mobility Innovators



Sony is actively involved in developing autonomous driving technology, car security, and infotainment systems for other carmakers and has established its own automotive division called Sony Mobility Inc.

In the start-up arena, the kinds of innovations and concepts currently gaining traction are quite diverse. There are a number of shared electric vehicle companies in the micro-mobility space such as Lime, which powers millions of rides on e-scooters and e-bikes in almost 250 cities. There are charging infrastructure companies such as Chargepoint, that are building critical infrastructure to support the operation of zero emissions vehicles. Multiple software platform companies such as Launch Mobility, are competing to offer connected car integration systems for safety, communication and entertainment. At the same time, other software developers are focused on platforms that help, among other things, to reduce congestion and provide real time data to public transit riders. Mobility as a service is also evolving beyond "on the go" ride and car sharing apps, to include, among other things, a new breed of shared ownership platforms such as Upshift, a fractional car membership company.

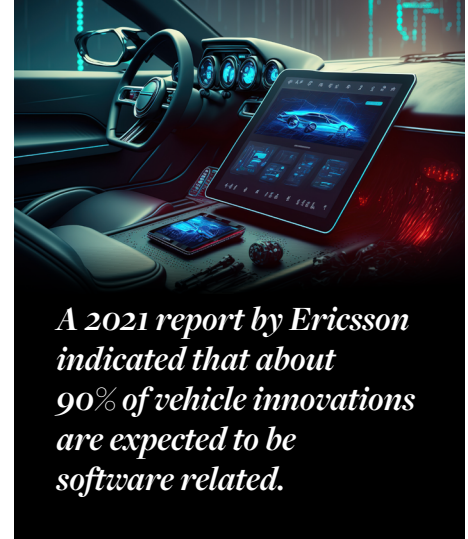
Cities and municipalities are getting directly involved as well. Washington, D.C., for example, has created a first-

ever Mobility Innovation District (The MID). Public funds have been committed to get the ball rolling, but the city is betting on multiple investments from mobility tech companies to help them in their mission of creating a global innovation hub which will showcase how mobility innovation can "make a city more equitable, sustainable, safe and prosperous," according to its launch announcement.

A lot of new offerings in the connected car market will likely come from software developments. A 2021 report by Ericsson indicated that about 90% of vehicle innovations are expected to be software related. The report notes that the value ratio for an average car in 2021 was 90% hardware and 10% software, but in the future that ratio will shift to about 40% hardware, 40% software and 20% content, which includes the apps which bridge and integrate both hardware and software. This is a significant trend that we can expect to see accelerate in 2023.

WALL STREET IS NOT MAIN STREET

What's happening on Wall Street is dynamic as well. The stock market was betting pretty big on the mobility market in 2021. Electric only manufacturers like Tesla and Nio had market caps that towered over their legacy cousins. Those valuations have decreased in 2022, but the electric-



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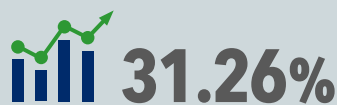
only companies have maintained their dominance. Like mobility start-ups, the electric only manufacturers are highly automated, have fewer constraints than conventional auto manufacturers and – importantly – are not encumbered by legacy assets. With all of that said, 2022 has been tough on most stocks, electric only car manufacturers and many other mobility start-ups included.

Case in point. In December of 2021, Investing.com chose 15 stocks in the e-mobility sector that it predicted could become the new sector leaders in 2022. Each were followed by at least five analysts, had at least five buy recommendations, and had a market capitalization of at least \$5 billion. The list included companies from the traditional automotive industry, the semiconductor industry, as well as charging station operators that could benefit from the electric mobility trend. Only three of the 15 are now worth more than they were at the time of their selection, and those that performed best in 2022 are in the batteries and motors, solar and software industries. Notably, none of the legacy car manufacturers, charging companies or tier one component suppliers on the list of 15 made the cut.

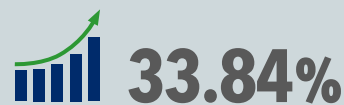
What 2023 holds is unknown, but there is significant momentum behind the sector as a whole, and investment is expected to continue to grow. For their part, legacy auto manufacturers are betting on their new divisions, spin-offs and stand-alone entities to compete on a more level playing field with the electric only and mobility start-ups going into 2023 and beyond.

Global Mobility-As-A-Service Market Outlook

Year-Over-Year Growth Rate of 2023



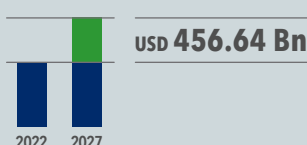
CAGR 2022-2027



Growth Momentum



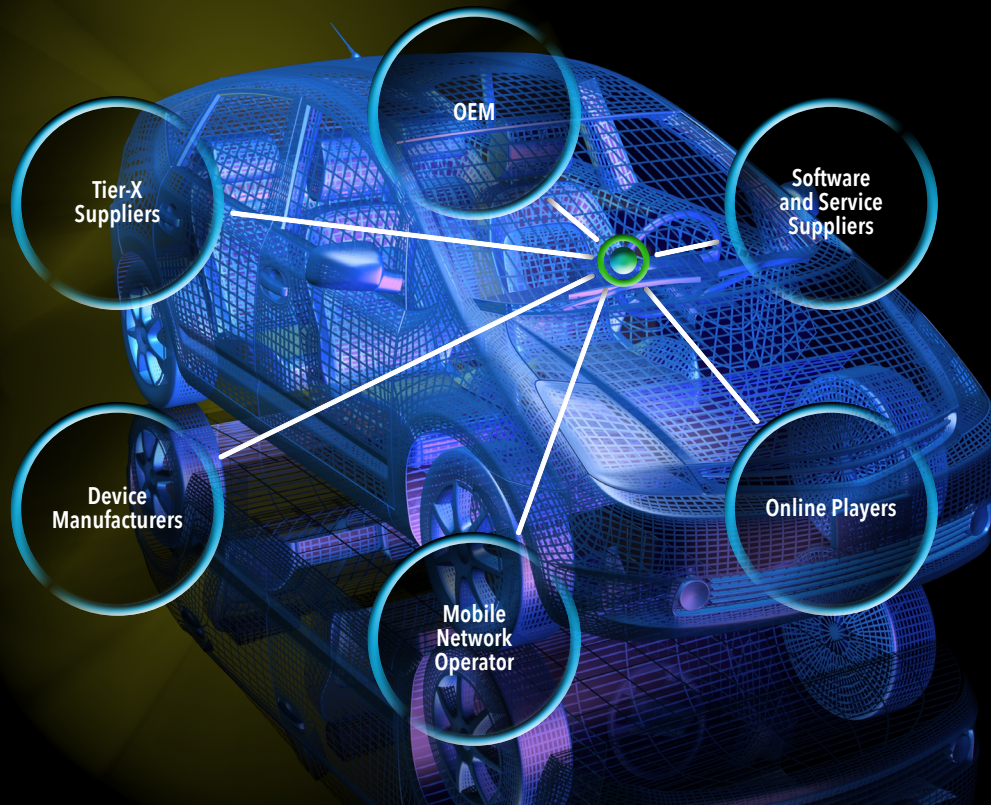
Market Size Growth



Legacy Brands: New Partners & Tech Integration

The partners and technology that legacy auto brands are beginning to integrate into their business models will continue to become more and more relevant as the mobility market develops and expands.

Source: Ericsson



NEXT STEPS AND NEW MINDSETS

Auto manufacturers and suppliers are closely examining and assessing their physical assets, human capital and strategic plans. Many have already begun to shift resources, processes, and operating models toward more data engineering and software development. To continue their transformation into more agile, flexible and digital technology companies, it will be necessary to ramp up recruitment of software and computer engineering talent, competing with the electric only companies and mobility start-ups for those resources. Attracting top talent will require a culture shift as well. That said, there is no question that a wide range of legacy companies will play an important role in the long-term success of the mobility market.

This kind of transformation is not particularly easy or quick, however, and necessitates adoption of a new mindset and a willingness to do

things differently. We expect to see a number of automakers and suppliers exploring collaborations with mobility start-ups, as well as joint ventures and creative partnerships, in order to tap the full potential of the net-zero future. The potential reward associated with such action, of course, comes along with a counterbalancing risk. Legacy players know a lot about operational excellence. Now they have to define what that looks like in the mobility age and how to achieve it alongside quick growth startups. Part of that process will be to ask a lot of tough questions and determine who owns, shares, piggybacks on, or acquires what from whom – and how the associated people and processes work efficiently together – to enable a successful transition from a conventional car model to a true mobility ecosystem model.

If your business or a business within your portfolio is active anywhere across the rapidly evolving transportation/ mobility continuum, we encourage you to reach out for a conversation. Members of the

Hilco Mobility Team work in specialty practices across our global platform of companies and possess a deep understanding of the factors that are driving value creation in the market. We can assist companies in transition to address their complex challenges and provide lenders with insights on how to stay closely connected to, and well-informed about, their borrowers' businesses. We are here to help.

Industry experts from across the Hilco Global platform and Getzler Henrich are contributing to this Mobility article series, including: Tom Boniface (Hilco Valuation & Advisory Platforms), Geoffrey Frankel (Hilco Corporate Finance), Kevin Krakora (Getzler Henrich- Turnaround/ Restructuring), Keith Spacapan (Hilco Valuation Services- Automotive), Ed Zimmerlin (Hilco Valuation Services- Multidisciplinary). For more information, contact Ed Zimmerlin at ezimmerlin@hilcoglobal.com