

Advanced Mobility Market Update



May 2018

Electric
Vehicles



Ecosystem
Intelligence



Mobility-as-
a-Service



Autonomous
Infrastructure



Data &
Analytics



About Greentech Capital Advisors

Our mission is to empower companies and investors who are creating a more efficient and sustainable global infrastructure. We are purpose-built to ensure that our clients achieve success. We have deeply experienced senior bankers and investment professionals who are sector experts and understand our clients' industry and needs. We reach a vast global network of buyers, growth companies, asset owners and investors, and thereby provide clients with more ways to succeed through a deeper relationship network. We have directly relevant transaction experience which enables us to find creative structures and solutions to close transactions. We are an expert team of 55 professionals working seamlessly on our clients' behalf in New York, Zurich and San Francisco and through a strategic partnership in Japan. Our team of experienced bankers and investment professionals provides conflict-free advice and thoughtful, innovative solutions.

Business Developments

Greentech's Take:

- > Apple's aggressive push into autonomous vehicles comes as many see Google's Waymo as a large driver of future value for the company

- > **Anheuser-Busch** announced an order of up to 800 semi trucks powered by hydrogen gas to help its long-haul trucks run on "clean energy" ([CNN](#))
- > **Apple** now has 55 self-driving cars registered with the California Department of Motor Vehicles, second only to GM Cruise, with 104 vehicles ([TechCrunch](#))
- > **Audi** outlined plans to sell 800,000 fully electric and plug-in hybrid cars in 2025 across "more than 20 different electric vehicle models" ([electrek](#))
- > **Blink Charging** received approval for a fast EV charging station, which they claim can cut charging time for EVs by approximately two-thirds ([UtilityDive](#))
- > **Drive.ai** has partnered with Frisco, Texas and the Hall Group to deploy the first autonomous ride-hailing platform in the state of Texas ([TechCrunch](#))
- > **FedEx** has begun delivering packages in upstate New York with its first hydrogen-powered van in North America ([BNEF](#))
- > **Foxconn** could potentially run autonomous trucks along I-94 highway as early as 2021 using technology it is exploring with government officials ([BizJournal](#))
- > **Land Rover** is working on a self-driving technology capable of handling all types of terrain and weather as a part of an ~\$5 million project ([BNEF](#))
- > **Peterbilt**, a subsidiary of PACCAR, announced plans to develop an all-electric truck and tractor with the help of Meritor and TransPower ([BizJournal](#))
- > **Pivot Power**, a London-based startup, announced plans to install 2 GW of large-scale batteries and EV charging points across the UK ([BNEF](#))
- > **Proterra** is offering new high-powered charging systems specifically designed for commercial fleets and allows buses to send energy back to the grid ([BNEF](#))
- > **Siemens** is investing \$5 million over three years into American Center for Mobility which includes software, hardware and support ([Crains](#))
- > **Sony** is moving forward with plans to introduce a taxi-hailing service in Japan, unveiling a joint venture with cab companies called "Everybody's Taxi" ([BNEF](#))
- > **Toyota Research Institute** plans to open a closed-course AV testing facility to reproduce scenarios too risky to execute on public roads ([AutoNews](#))
- > On **Tesla's** earning call, the company said its AV ride-sharing network will be ready by the end of next year from a technical standpoint ([TechCrunch](#))
- > **Volvo's** cars and trucks in Norway and Sweden are now able to share traffic information through Volvo's Connected Cloud ([TechCrunch](#))
- > **Waymo** announced it has ordered 62,000 Chrysler Pacifica minivans as it looks to expand into a commercialized ride-hailing service ([Quartz](#))

Greentech's Take:

- > Waymo continues to take a vehicle agnostic approach with its software after ordering 20,000 electric vehicles from Jaguar last month

Regulatory Developments

- > The **California Department of Motor Vehicles** issued an AV testing permit to **Didi Chuxing** to test self-driving cars with a safety driver ([Engadget](#)); California announced a pilot program for self-driving cars to offer rides to customer, however the rides must offer the service at no charge to passengers ([Gizmodo](#))
- > Mass-transit company, **Kolumbus**, was granted a license by the **Norwegian Ministry of Transport** to run an autonomous bus service on some public roads, but limits the maximum speed to 7.5 mph and 6 passengers at a time; the permit is the first of its kind in Scandinavia ([ZDNet](#))
- > The **City of San Francisco** proposed a ballot initiative for the November elections to tax rides in autonomous vehicles and those with ride-sharing services such as Uber, Lyft, and Ford-owned Chariot ([BNEF](#))
- > New cars sold in the U.S. must have backup cameras under a federal regulation announced in 2014 that just went into effect ([USA Today](#))

Selected Capital Raises

Greentech's Take:

- > SoftBank's investment helps validate GM's acquisition of Cruise Automation while also giving GM access to the partnership network of SoftBank's portfolio companies

- > **Algolux**, a developer of machine learning technology for autonomous vision and imaging, raised \$10 million of funding led by **GM Ventures** ([PE Hub](#))
- > **CarBlock**, a blockchain transportation solutions provider, announced it has raised capital from blockchain investment firm **Consensus Lab** ([China Money](#))
- > **Carro**, a Singaporean automotive marketplace, raised \$60 million in a round co-led by **SoftBank Ventures Korea** and **Insignia Ventures** ([TechCrunch](#))
- > Holographic display developer, **DigiLens**, raised \$25 million from **Continental**, raising Continental's stake to 18% ([VentureBeat](#))
- > **Flexport**, a logistics software maker, raised \$100 million from Chinese courier company, **SF Express**, to help expand its operations to China ([BizJournal](#))
- > **General Motors** announced it has received a \$2.25 billion investment from **SoftBank** into GM Cruise, its AV arm, now valued at \$11.5 billion ([Reuters](#))
- > **GPS Insight**, a SaaS-based fleet management software provider, announced an investment from **Bregal Sagemount** ([Business Wire](#))
- > **Kalray**, a French developer of processors for autonomous vehicles, raised €10 million in funding from **Alliance Ventures** and **Bpifrance** ([Finsmes](#))
- > **Metawave**, a developer of an all-in-one autonomous vehicle sensor module, announced a \$10 million raise from a consortium of investors ([VentureBeat](#))
- > **Miovision**, a Canadian smart traffic intersection technology, raised \$15 million from a syndicate of new and existing investors ([PE Hub](#))
- > **OnTruck**, a developer of a platform to better match supply and demand in the road freight industry, raised €25 million in Series B funding ([TechCrunch](#))
- > Israeli cyber security solutions provider, **Regulus Cyber**, raised \$6.3 million from **Sierra Ventures**, **Canaan Partners** and **F2 Capital** ([Business Wire](#))
- > **Ridecell**, a developer of transportation optimization software, raised \$28.6 million from **Cox Automotive**, **DENSO**, **Penske** and **Mitsui** ([PR Newswire](#))
- > **Roadstar AI**, a Chinese self-driving startup, raised \$128 million in Series A funding, setting a private financing record for China's AV industry ([Medium](#))
- > **StoreDot**, an EV charging startup, raised \$20 million from **BP** ([CNBC](#))
- > **Taxify**, a European and African focused ride-hailing company, received \$175 million from investors including **Daimler** and **Didi Chuxing** ([Reuters](#))

Selected Mergers & Acquisitions

- > **ANSYS** acquired **OPTIS**, an optical simulation provider, helping create a comprehensive solution for simulating autonomous vehicles ([PR Newswire](#))
- > **ParkWhiz**, a transactional parking platform, has acquired **CodiPark**, a developer of a cloud based platform for parking management ([PR Newswire](#))
- > **Total** has agreed to purchase up to 50.8 million shares of Clean Energy Fuel's (Ticker: CLNE) stock, giving it a 25% stake in the company ([Reuters](#))

Selected Partnerships

Greentech's Take:

- > Companies will continue to experiment with different business models and partnership structures for AV ride-hailing

- > **Apple** and **Volkswagen** announced a partnership, where Apple will use Volkswagen's passenger vans as self-driving shuttles for its employees ([NYT](#))
- > **BMW**, **Ford**, **GM** and **Renault** have joined the Mobility Open Blockchain Initiative to explore blockchain's potential in the mobility space ([TechCrunch](#))
- > **Didi Chuxing** and **Volkswagen** are in talks to form a JV where Volkswagen will help develop "purpose-built" vehicles for Didi's services ([Reuters](#))
- > **GM** has partnered with **Autodesk** to develop 3D printed parts ([Investors](#))
- > **Lyft** and **Aptiv** partnered to launch a fleet of 30 AVs in Las Vegas ([CNET](#))
- > **Phantom Auto** and **Renovo** have partnered to deploy teleoperation safety technology for production fleet operations ([Engadget](#))

Capital Raises

Date	Company	Invested (\$mm) ⁽¹⁾	Investors	Company Description
5/1	Algolux	\$10.0	General Motors Ventures, Drive Capital, Intact Ventures, Real Ventures	Developer of machine learning technology for autonomous vision and imaging
5/1	Flexport	\$100.0	SF Express	Provider of customs brokerage and freight forwarding platform intended to provide visibility and control over entire supply chain
5/1	Regulus Cyber	\$6.3	Sierra Ventures, Canaan Partners Israel, the Technion, F2 Capital	Developer of cyber security solutions for drones, robots, and autonomous systems
5/7	Kalray	€10.0	Alliance Ventures, Bpifrance	Developer of intelligent processors for intelligent data centers and autonomous vehicles
5/7	Miovision	\$15.0	MacKinnon, Bennett & Co, McRock Capital, BDC Capital, HarbourVest Partners	Developer of smart traffic intersection technology
5/13	Carro	\$60.0	Softbank Ventures Korea, Insignia Ventures, B Capital	Singapore-based automotive marketplace and car financing startup
5/15	Metawave	\$10.0	DENSO, Toyota AI Ventures, Hyundai Motor Co., Asahi Glass, Motus Ventures, Khosla Ventures, Autotech Ventures, Bold Capital, SAIC Capital, WTI, Alrai Capital	Developer of all-in-one sensor module for self-driving vehicles
5/15	Roadstar.ai	\$128.0	Wu Capital and Shenzhen Capital Group, Yunqi Partners, CMB International Capital Corporation, Vision Plus Capital	Shenzhen City-based developer of autonomous vehicle software
5/17	DigiLens	\$25.0	Continental	Developer of an electro-optical technology designed to use in mobile display and imaging applications
5/22	Storedot	\$20.0	BP Ventures	Developer of fast charging electric vehicle stations
5/24	Getaround	n.a.	Softbank	Peer-to-peer car rental service
5/29	Taxify	\$175.0	Daimler, Didi Chuxing, Korelya Capital, Taavet Hinrikus, TMT Investments	Developer of a mobile based taxi booking platform
5/30	CarBlock	n.a.	Consensus Lab	Blockchain-based transportation solution provider built on data generated by smart devices
5/30	GPS Insight	n.a.	Bregal Sagemount	Provider of SaaS-based fleet management software
5/30	OnTruck	€25.0	Cathay Innovation, Atomico, Idinvest, All Iron Ventures, Total Energy Ventures, GP Bullhound, Point 9 Capital, Samaipata Venture	Developer of a freight delivery platform designed to connect businesses with road freight companies
5/31	GM Cruise	\$2,250.0	Softbank	Developer of autonomous vehicles
5/31	Protean Electric	\$40.0	Weifu High-Technology Group, Oak Investment Partners	Developer of in-wheel electric drive systems
5/31	Ridecell	\$28.6	Cox Automotive, Initialized Capital, DENSO, Penske, Deutsche Bahn, Mitsui	The company provides a software platform that runs new mobility services, such as car-sharing, ride-sharing, and autonomous fleet management

Mergers & Acquisitions

Date	Target	Acquiror	EV	EV		Target Description
			(\$mm)	Revenue	EBITDA	
5/2	OPTIS	ANSYS	n.a.	n.a.	n.a.	Provider of physics-based optical simulation solutions for developing autonomous vehicles
5/10	Clean Energy Fuels	Total	\$83.4	1.6x	39.4x	Largest marketer and producer of renewable natural gas in North America specifically designed for vehicle fleets
5/31	CodiPark	ParkWhiz	n.a.	n.a.	n.a.	Developer of a cloud based platform for parking management

Source: Greentech Estimates, FactSet, Public Disclosures.

(1) Investment amounts in \$ millions unless otherwise indicated.

Advanced Mobility Market Update

Trading Comparables

Company	Price as of 5/31/2018	Market Cap	Firm Value	EV / Revenue		EV / EBITDA		P / E	
				2018E	2019E	2018E	2019E	2018E	2019E
Automotive Companies									
Toyota	¥ 6921.0	\$207,862	\$344,194	1.3x	1.2x	10.3x	9.8x	8.9x	8.7x
Volkswagen	€ 159.10	93,542	254,735	0.9x	0.9x	6.1x	5.8x	6.0x	5.6x
Daimler	€ 61.68	77,027	202,140	1.0x	1.0x	8.8x	8.5x	6.5x	6.4x
BMW	€ 85.38	64,819	164,937	1.4x	1.4x	9.6x	9.3x	7.5x	7.3x
Ford	\$ 11.55	46,028	164,425	1.0x	1.0x	13.3x	12.6x	7.5x	7.5x
General Motors	\$ 42.70	60,183	136,082	0.9x	0.9x	9.1x	8.7x	6.7x	6.5x
Nissan	¥ 1080.50	41,976	104,899	1.0x	0.9x	9.9x	9.3x	7.0x	7.1x
Honda	¥ 3447.0	57,472	102,049	0.7x	0.7x	8.2x	7.9x	7.6x	8.0x
SAIC Motor	¥ 36.25	66,166	81,999	0.6x	0.5x	13.6x	12.1x	11.1x	10.3x
Hyundai	₩ 139000.0	33,979	79,484	0.9x	0.8x	10.9x	9.8x	8.8x	7.4x
Renault	€ 82.63	28,524	68,639	1.0x	0.9x	8.6x	8.3x	5.2x	4.9x
Tesla	\$ 284.73	48,345	59,400	3.1x	2.2x	39.2x	16.7x	NM	NM
Fiat Chrysler	€ 19.40	44,137	49,169	0.4x	0.4x	3.0x	2.9x	5.9x	5.5x
BYD	HK\$ 50.90	20,426	32,775	1.6x	1.4x	12.2x	10.4x	23.5x	17.5x
Suzuki	¥ 6262.0	28,301	27,642	0.8x	0.7x	5.5x	5.0x	12.4x	11.7x
Geely	HK\$ 22.25	25,462	23,654	1.3x	1.1x	8.5x	7.1x	11.8x	9.3x
Peugeot	€ 19.95	21,066	18,388	0.2x	0.2x	2.3x	2.1x	7.6x	6.7x
Tata Motors	₹ 282.90	13,383	17,643	0.4x	0.3x	2.9x	2.5x	9.3x	7.5x
Subaru	¥ 3330.0	23,575	15,167	0.5x	0.5x	3.5x	3.2x	9.9x	8.8x
Guangzhou Automobile	HK\$ 9.50	18,003	13,530	1.0x	0.9x	10.8x	9.4x	5.9x	5.2x
Dongfeng Motor	HK\$ 8.95	9,831	11,206	0.6x	0.6x	34.0x	30.5x	4.5x	4.3x
KIA	₩ 31150.0	11,714	10,179	0.2x	0.2x	3.1x	2.8x	6.7x	5.7x
Mazda	¥ 1370.0	7,967	7,130	0.2x	0.2x	3.7x	3.3x	8.4x	8.0x
Mitsubishi	¥ 824.0	11,303	6,436	0.3x	0.3x	3.9x	3.3x	11.2x	10.2x
Mean				0.9x	0.8x	10.0x	8.4x	10.1x	9.0x
Median				0.9x	0.8x	8.8x	8.5x	7.6x	7.4x
Truck Companies									
Daimler	€ 61.68	\$77,027	\$202,140	1.0x	1.0x	8.8x	8.5x	6.5x	6.4x
Volvo	KR 151.75	36,547	47,513	1.1x	1.1x	8.3x	8.2x	12.2x	11.7x
PACCAR	\$ 62.23	21,893	27,473	1.3x	1.3x	10.0x	10.1x	10.9x	10.8x
MAN SE	€ 93.10	15,978	18,771	1.1x	1.0x	9.9x	8.4x	38.8x	27.1x
Isuzu	¥ 1459.0	11,394	12,311	0.6x	0.6x	5.5x	5.0x	10.0x	9.2x
Navistar	\$ 37.44	3,695	7,811	0.8x	0.8x	10.3x	9.2x	16.5x	11.5x
Mean				1.0x	1.0x	8.8x	8.2x	15.8x	12.8x
Median				1.0x	1.0x	9.3x	8.5x	11.6x	11.2x
Tier 1 Suppliers									
Continental	€ 217.10	\$50,686	\$53,584	1.0x	0.9x	6.5x	5.9x	13.2x	11.9x
Denso	¥ 5290.0	38,664	37,435	0.8x	0.7x	5.8x	5.4x	13.1x	12.3x
Bridgestone	¥ 4365.0	30,596	30,342	0.9x	0.9x	5.0x	4.8x	10.8x	10.2x
Aptiv	\$ 97.50	25,815	28,889	2.0x	1.9x	12.0x	11.1x	18.1x	16.4x
Magna	C\$ 83.14	22,884	26,103	0.6x	0.6x	6.2x	5.9x	9.2x	8.4x
Michelin	€ 110.70	23,198	24,213	1.0x	0.9x	4.9x	4.6x	10.8x	9.8x
Valeo	€ 54.32	15,196	18,016	0.8x	0.7x	5.9x	5.3x	12.9x	11.1x
Lear	\$ 198.0	13,132	14,142	0.6x	0.6x	6.1x	5.8x	10.1x	9.3x
Autoliv	\$ 147.97	12,887	13,638	1.2x	1.1x	9.3x	8.1x	19.8x	16.6x
Faurecia	€ 72.50	11,682	12,527	0.6x	0.6x	5.3x	4.8x	13.6x	12.1x
BorgWarner	\$ 48.78	10,249	12,270	1.1x	1.1x	6.7x	6.4x	11.0x	10.2x
Goodyear	\$ 24.43	5,859	11,455	0.7x	0.7x	4.8x	4.4x	6.9x	5.8x
Delphi	\$ 50.10	4,448	5,824	1.1x	1.1x	6.9x	6.4x	10.1x	9.3x
Visteon	\$ 124.96	3,692	3,657	1.1x	1.1x	9.5x	8.8x	17.9x	15.7x
ATS Automation Tooling Systems	C\$ 20.27	1,469	1,458	1.6x	1.5x	12.6x	11.5x	23.7x	21.1x
Stoneridge	\$ 31.53	898	963	1.1x	1.1x	8.6x	8.1x	15.1x	14.0x
Mean				1.0x	1.0x	7.3x	6.7x	13.5x	12.1x
Median				1.0x	0.9x	6.3x	5.9x	13.0x	11.5x
Autonomous Driving Chip Makers									
Intel	\$ 55.20	\$257,232	\$270,448	4.0x	3.9x	9.2x	8.8x	14.4x	13.7x
Nvidia	\$ 252.19	153,079	147,779	11.3x	10.1x	27.4x	24.3x	36.2x	32.7x
Qualcomm	\$ 58.12	86,170	69,693	3.2x	3.1x	12.2x	9.0x	17.5x	16.2x
Advanced Micro Devices	\$ 13.73	13,309	13,649	2.0x	1.9x	19.1x	16.3x	30.2x	23.0x
Mean				5.1x	4.7x	17.0x	14.6x	24.5x	21.4x
Median				3.6x	3.5x	15.7x	12.6x	23.8x	19.6x

Source: FactSet, SEC filings and third party providers. Values in U.S. Dollars. Share prices shown in local currencies.

Advanced Mobility Market Update

Trading Comparables (cont.)

Company	Price as of 5/31/2018	Market Cap	Firm Value	EV / Revenue		EV / EBITDA		P / E	
				2018E	2019E	2018E	2019E	2018E	2019E
Intelligent Transport									
Roper Technologies	\$ 275.79	\$28,450	\$32,706	6.5x	6.1x	19.1x	17.8x	24.5x	22.7x
FLIR Systems	\$ 53.90	7,396	7,365	4.1x	3.9x	17.6x	15.5x	25.1x	23.4x
Conduent	\$ 19.25	4,052	5,684	1.0x	1.0x	8.3x	7.7x	19.3x	16.4x
LS Corp	W 85500.0	2,554	5,672	0.6x	0.6x	7.9x	7.5x	5.4x	9.0x
Beijing E-Hualu IT	Y 30.50	1,789	2,349	3.6x	2.7x	NM	14.9x	32.7x	23.3x
Gosuncn Technology Group	Y 8.07	2,230	2,129	3.8x	3.0x	NM	NM	25.2x	19.6x
Cubic Corporation	\$ 69.55	1,894	2,099	1.8x	1.6x	21.0x	14.6x	70.9x	25.4x
Vaisala	€ 21.80	927	830	2.1x	2.0x	13.9x	11.9x	23.3x	19.8x
Kapsch TrafficCom	€ 37.0	561	532	0.7x	0.6x	6.1x	5.6x	12.2x	10.4x
Beijing Wanji Technology ⁽¹⁾	Y 25.13	425	428	NM	NM	NM	NM	NM	NM
INIT Innovation in Traffic Systems	€ 17.95	210	236	1.4x	1.3x	NM	10.0x	25.5x	19.0x
Iteris, Inc	\$ 5.13	170	153	1.4x	1.2x	NM	23.3x	NM	77.9x
Q-Free	NOK 7.90	86	118	1.1x	1.0x	NM	8.5x	30.4x	13.4x
Image Sensing Systems ⁽¹⁾	\$ 4.15	22	18	NM	NM	NM	NM	NM	NM
Mean				2.3x	2.1x	13.4x	12.5x	26.8x	23.4x
Median				1.6x	1.5x	13.9x	11.9x	25.1x	19.7x
ITS / Smart Tolling									
Abertis Infraestructuras	€ 18.36	\$21,225	\$42,250	6.6x	6.5x	10.0x	9.5x	17.6x	16.2x
Atlantia	€ 24.79	23,896	40,807	5.7x	5.4x	8.9x	8.6x	16.7x	15.3x
Ferrovial	€ 17.43	14,899	20,064	1.5x	1.4x	20.9x	19.0x	47.5x	31.1x
Autostrada	€ 19.72	2,279	5,420	2.3x	2.2x	5.9x	5.5x	8.9x	8.2x
Mean				4.0x	3.9x	11.4x	10.7x	22.7x	17.7x
Median				4.0x	3.8x	9.4x	9.1x	17.1x	15.7x
Telematics									
Descartes Systems	\$ 29.80	\$2,288	\$2,304	8.4x	7.6x	24.5x	21.2x	72.4x	52.6x
TomTom	€ 8.25	2,267	2,167	2.3x	2.3x	10.9x	9.7x	26.4x	21.7x
Orbcomm	\$ 9.66	758	977	3.3x	3.0x	17.1x	11.9x	NM	NM
CalAmp	\$ 21.22	759	757	1.9x	1.8x	12.7x	10.8x	16.8x	14.8x
Ituran ⁽¹⁾	\$ 33.0	775	744	NM	NM	NM	NM	NM	NM
MiX Telematics	R 9.35	446	422	2.9x	2.7x	10.2x	9.0x	29.7x	25.6x
Quartix	£ 3.80	241	232	7.1x	7.3x	23.2x	26.4x	30.0x	34.5x
Inseeqo	\$ 1.83	109	227	1.2x	1.1x	13.1x	7.6x	NM	21.1x
TeleNav	\$ 5.35	239	148	1.4x	0.7x	NM	NM	NM	NM
Kerlink	€ 19.25	114	102	2.4x	1.7x	NM	NM	NM	24.7x
Quarterhill (fka Wi-LAN)	C\$ 1.63	149	79	0.9x	0.7x	46.9x	5.1x	75.4x	8.7x
Mean				3.2x	2.9x	19.8x	12.7x	41.8x	25.5x
Median				2.4x	2.0x	15.1x	10.3x	29.9x	23.2x
Logistics									
UPS	\$ 116.12	\$100,277	\$119,191	1.7x	1.6x	11.6x	10.5x	16.0x	14.8x
FedEx	\$ 249.12	66,569	81,360	1.2x	1.1x	8.1x	7.3x	15.1x	13.1x
Deutsche Post	€ 32.47	46,775	61,192	0.8x	0.8x	7.2x	6.7x	14.4x	13.1x
Fortive	\$ 72.69	25,337	28,335	3.9x	3.7x	16.1x	15.0x	20.8x	19.3x
J.B. Hunt	\$ 128.10	14,060	15,053	1.8x	1.6x	12.1x	10.6x	24.2x	20.2x
Penske	\$ 48.15	4,092	10,058	0.4x	0.4x	12.5x	12.9x	9.3x	8.9x
Mean				1.6x	1.5x	11.2x	10.5x	16.7x	14.9x
Median				1.4x	1.3x	11.8x	10.6x	15.6x	13.9x
Communications / Infrastructure									
Verizon	\$ 47.67	\$196,968	\$314,781	2.4x	2.4x	6.6x	6.5x	10.5x	10.2x
AT&T	\$ 32.32	198,477	313,789	2.0x	2.0x	6.2x	6.2x	9.5x	9.4x
Cisco Systems	\$ 42.71	200,860	174,501	3.5x	3.4x	10.2x	9.8x	15.7x	14.2x
T-Mobile	\$ 55.70	47,169	77,702	1.8x	1.7x	6.4x	6.1x	17.2x	14.3x
Sprint	\$ 5.14	20,619	52,610	1.6x	1.6x	4.5x	4.3x	12.0x	NM
Hitachi	¥ 796.60	35,440	50,037	0.6x	0.6x	5.0x	4.7x	9.7x	9.0x
Toshiba	¥ 306.0	18,366	23,905	0.7x	0.7x	16.1x	14.7x	1.7x	4.7x
Xerox	\$ 27.18	6,922	11,254	1.1x	1.1x	6.1x	6.2x	7.6x	7.3x
Mean				1.7x	1.7x	7.7x	7.3x	10.5x	9.9x
Median				1.7x	1.7x	6.3x	6.2x	10.1x	9.4x
Aggregate Mean				1.8x	1.7x	10.9x	9.4x	17.3x	14.8x
Aggregate Median				1.1x	1.1x	9.1x	8.5x	12.4x	11.7x

Source: FactSet, SEC filings and third party providers. Values in U.S. Dollars. Share prices shown in local currencies.

(1) Denotes limited equity research coverage.

Advanced Mobility Market Update

Trading Comparables

Company	Price as of 4/30/2018	Market Cap	Firm Value	EV / Revenue		EV / EBITDA		P / E	
				2018E	2019E	2018E	2019E	2018E	2019E
Automotive Companies									
Toyota	¥ 7181.0	\$214,134	\$358,046	1.3x	1.3x	11.6x	11.0x	9.9x	9.7x
Volkswagen	€ 169.40	103,208	270,048	0.9x	0.9x	6.2x	5.9x	6.4x	6.0x
Daimler	€ 65.50	84,664	212,710	1.0x	1.0x	8.9x	8.6x	7.0x	6.8x
BMW	€ 92.47	72,597	173,872	1.4x	1.4x	9.7x	9.2x	8.2x	7.9x
Ford	\$ 11.24	44,793	163,190	1.1x	1.1x	13.1x	12.5x	7.2x	7.3x
General Motors	\$ 36.74	51,775	127,674	0.9x	0.9x	8.5x	8.1x	5.8x	5.7x
Nissan	¥ 1151.50	44,415	116,049	1.1x	1.0x	10.5x	9.9x	7.5x	7.4x
Honda	¥ 3767.0	62,359	106,619	0.8x	0.7x	8.5x	8.1x	8.3x	8.6x
Hyundai	₩ 160000.0	39,682	83,269	0.9x	0.9x	11.0x	10.0x	10.0x	8.5x
Renault	€ 89.84	32,099	73,620	1.0x	1.0x	8.9x	8.5x	5.6x	5.3x
SAIC Motor	¥ 31.93	58,796	71,792	0.5x	0.5x	11.5x	10.1x	9.8x	9.0x
Tesla	\$ 293.90	49,646	59,648	3.2x	2.3x	36.2x	16.0x	NM	NM
Fiat Chrysler	€ 18.57	43,729	49,566	0.4x	0.3x	2.9x	2.8x	5.7x	5.4x
BYD	HK\$ 55.15	21,563	32,639	1.6x	1.3x	11.6x	10.0x	22.3x	17.4x
Suzuki	¥ 5891.0	26,434	25,799	0.7x	0.7x	5.1x	4.8x	12.3x	11.6x
Geely	HK\$ 21.0	24,014	22,208	1.2x	1.0x	7.9x	6.6x	11.1x	8.7x
Tata Motors	₹ 340.20	16,177	20,130	0.4x	0.4x	3.0x	2.6x	9.5x	7.4x
Peugeot	€ 20.42	22,323	19,552	0.2x	0.2x	2.4x	2.2x	7.8x	7.0x
Subaru	¥ 3679.0	25,861	17,965	0.6x	0.6x	3.9x	3.7x	10.8x	9.5x
Guangzhou Automobile	HK\$ 14.50	18,609	14,070	1.0x	0.9x	11.2x	9.7x	6.2x	5.5x
KIA	₩ 33100.0	12,563	11,416	0.2x	0.2x	3.4x	3.1x	7.2x	6.1x
Dongfeng Motor	HK\$ 8.73	9,584	9,792	0.5x	0.5x	24.6x	22.2x	4.3x	4.2x
Mazda	¥ 1521.50	8,785	7,954	0.2x	0.2x	3.9x	3.6x	8.9x	8.3x
Mitsubishi	¥ 816.0	11,113	6,691	0.3x	0.3x	4.2x	3.5x	12.1x	11.1x
Mean				0.9x	0.8x	9.6x	8.1x	9.8x	8.8x
Median				0.9x	0.9x	8.9x	8.5x	8.2x	7.7x
Truck Companies									
Daimler	€ 65.50	\$84,664	\$212,710	1.0x	1.0x	8.9x	8.6x	7.0x	6.8x
Volvo	₩ 149.20	36,404	47,482	1.1x	1.1x	8.2x	8.0x	12.1x	11.6x
PACCAR	\$ 63.67	22,418	27,826	1.3x	1.3x	10.3x	10.3x	11.3x	11.1x
MAN SE	€ 95.50	16,964	19,855	1.1x	1.1x	10.1x	9.4x	37.8x	31.0x
Isuzu	¥ 1674.0	12,979	14,178	0.7x	0.7x	6.3x	5.9x	11.1x	10.3x
Navistar	\$ 34.81	3,435	7,551	0.8x	0.8x	10.0x	8.9x	15.4x	10.7x
Mean				1.0x	1.0x	9.0x	8.5x	15.8x	13.6x
Median				1.1x	1.0x	9.4x	8.8x	11.7x	10.9x
Tier 1 Suppliers									
Continental	€ 221.20	\$53,452	\$56,621	1.0x	1.0x	6.5x	6.0x	13.3x	12.0x
Denso	¥ 5756.0	41,770	40,550	0.8x	0.8x	6.3x	5.8x	13.8x	12.8x
Bridgestone	¥ 4589.0	31,937	29,948	0.9x	0.8x	5.0x	4.8x	11.2x	10.6x
Michelin	€ 116.55	25,279	26,331	1.0x	1.0x	5.1x	4.8x	11.3x	10.3x
Aptiv	\$ 84.58	22,468	25,208	1.8x	1.7x	10.8x	9.9x	16.3x	14.7x
Magna	C\$ 75.83	21,120	24,274	0.6x	0.6x	5.9x	5.7x	8.8x	7.9x
Valeo	€ 55.44	16,053	18,972	0.8x	0.7x	6.0x	5.4x	13.0x	11.2x
Lear	\$ 186.97	12,400	13,112	0.6x	0.6x	5.6x	5.4x	9.5x	8.8x
Autoliv	\$ 134.05	11,675	12,426	1.1x	1.0x	8.5x	7.4x	17.9x	15.0x
BorgWarner	\$ 48.94	10,282	12,303	1.1x	1.1x	6.7x	6.4x	11.1x	10.2x
Faurecia	€ 67.80	11,307	12,182	0.6x	0.5x	4.9x	4.6x	12.8x	11.6x
Goodyear	\$ 25.11	6,022	11,618	0.7x	0.7x	4.9x	4.4x	6.9x	5.9x
Delphi	\$ 48.41	4,297	5,657	1.1x	1.1x	6.7x	6.3x	10.0x	9.2x
Visteon	\$ 124.44	3,677	3,642	1.1x	1.1x	9.5x	8.8x	17.9x	15.7x
ATS Automation Tooling Systems	C\$ 17.57	1,288	1,285	1.5x	1.4x	11.6x	10.6x	22.4x	19.3x
Stoneridge	\$ 26.33	743	806	1.0x	0.9x	7.4x	6.9x	13.4x	12.2x
Mean				1.0x	0.9x	7.0x	6.5x	13.1x	11.7x
Median				1.0x	0.9x	6.4x	5.9x	12.9x	11.4x
Autonomous Driving Chip Makers									
Intel	\$ 51.62	\$240,549	\$253,765	3.8x	3.6x	8.6x	8.3x	13.5x	12.8x
Nvidia	\$ 224.90	136,522	131,419	10.6x	9.3x	26.5x	23.2x	37.2x	32.0x
Qualcomm	\$ 51.01	75,527	59,050	2.7x	2.6x	10.3x	7.7x	15.1x	14.1x
Advanced Micro Devices	\$ 10.88	10,544	10,887	1.6x	1.5x	15.4x	13.2x	24.2x	18.7x
Mean				4.7x	4.3x	15.2x	13.1x	22.5x	19.4x
Median				3.2x	3.1x	12.9x	10.8x	19.7x	16.4x

Source: FactSet, SEC filings and third party providers. Values in U.S. Dollars. Share prices shown in local currencies.

Advanced Mobility Market Update

Trading Comparables (cont.)

Company	Price as of 4/30/2018	Market Cap	Firm Value	EV / Revenue		EV / EBITDA		P / E	
				2018E	2019E	2018E	2019E	2018E	2019E
Intelligent Transport									
Roper Technologies	\$ 264.19	\$27,166	\$31,421	6.3x	6.0x	18.4x	17.3x	23.6x	22.0x
FLIR Systems	\$ 53.55	7,439	7,408	4.1x	3.9x	17.7x	15.6x	25.0x	23.2x
LS Corp	W 77900.0	2,349	5,821	0.6x	0.6x	7.3x	7.2x	9.6x	9.0x
Conduent	\$ 19.46	4,096	5,632	1.0x	1.0x	7.8x	7.4x	18.6x	16.1x
Gosuncn Technology Group	Y 14.42	2,670	2,569	4.8x	3.7x	NM	NM	29.6x	22.9x
Beijing E-Hualu IT	Y 33.78	1,999	2,485	3.8x	2.8x	NM	15.7x	36.2x	25.8x
Cubic Corporation	\$ 61.75	1,681	1,908	1.6x	1.5x	19.0x	13.4x	66.8x	NM
Vaisala	€ 20.40	898	797	1.9x	1.8x	12.9x	11.0x	21.8x	18.5x
Kapsch TrafficCom	€ 36.85	579	549	0.7x	0.6x	6.1x	5.6x	12.2x	10.4x
Beijing Wanji Technology ⁽¹⁾	Y 24.85	424	405	NM	NM	NM	NM	NM	NM
INIT Innovation in Traffic Systems	€ 19.80	240	267	1.5x	1.4x	NM	10.5x	26.3x	20.1x
Iteris, Inc	\$ 5.07	168	151	1.4x	1.1x	NM	16.7x	NM	43.6x
Q-Free	NOK 8.06	90	117	1.0x	0.9x	NM	8.1x	64.5x	16.0x
Image Sensing Systems ⁽¹⁾	\$ 4.55	24	21	NM	NM	NM	NM	NM	NM
Mean				2.4x	2.1x	12.8x	11.7x	30.4x	20.7x
Median				1.6x	1.5x	12.9x	11.0x	25.0x	20.1x
ITS / Smart Tolling									
Atlantia	€ 27.50	\$27,437	\$44,940	6.0x	5.8x	9.7x	9.2x	18.3x	17.0x
Abertis Infraestructuras	€ 18.26	21,850	43,610	6.6x	6.5x	9.9x	9.4x	17.6x	16.1x
Ferrovial	€ 17.74	15,691	21,037	1.5x	1.5x	20.6x	18.7x	37.0x	30.4x
Autostrada ⁽¹⁾	€ 22.85	2,733	5,984	NM	NM	NM	NM	9.3x	8.6x
Mean				4.7x	4.6x	13.4x	12.4x	20.6x	18.0x
Median				6.0x	5.8x	9.9x	9.4x	18.0x	16.6x
Telematics									
Descartes Systems	\$ 29.55	\$2,271	\$2,273	8.3x	7.6x	24.0x	20.9x	62.7x	49.1x
TomTom	€ 8.19	2,327	2,224	2.3x	2.3x	10.4x	9.1x	25.0x	20.3x
Orbcomm	\$ 9.02	705	918	3.1x	2.8x	16.2x	11.3x	NM	NM
CalAmp	\$ 19.75	704	702	1.8x	1.7x	11.8x	10.1x	15.6x	13.8x
Ituran ⁽¹⁾	\$ 31.35	657	624	2.4x	2.2x	8.1x	7.5x	14.6x	12.7x
MiX Telematics	R 8.44	409	387	2.7x	2.5x	9.7x	8.7x	28.0x	25.9x
Quartix	£ 3.80	250	240	7.1x	7.3x	23.2x	26.4x	30.0x	34.5x
Inseeqo	\$ 2.14	126	237	1.1x	1.1x	10.0x	7.1x	53.5x	12.2x
TeleNav	\$ 5.15	229	135	1.3x	0.6x	NM	NM	NM	NM
Kerlink	€ 19.80	122	108	2.5x	1.8x	NM	NM	NM	25.4x
Quarterhill (fka Wi-LAN)	C\$ 1.93	179	102	0.9x	0.9x	5.6x	4.5x	10.5x	7.9x
Mean				3.0x	2.8x	13.2x	11.7x	30.0x	22.4x
Median				2.4x	2.2x	10.4x	9.1x	26.5x	20.3x
Logistics									
UPS	\$ 113.50	\$97,837	\$114,067	1.6x	1.5x	11.1x	10.1x	15.7x	14.4x
FedEx	\$ 247.20	66,056	80,847	1.2x	1.1x	8.1x	7.3x	15.1x	13.0x
Deutsche Post	€ 36.10	53,826	56,588	0.7x	0.7x	6.3x	5.9x	15.5x	14.1x
Fortive	\$ 70.31	24,507	27,506	3.7x	3.6x	15.6x	14.6x	20.2x	18.7x
J.B. Hunt	\$ 117.43	12,889	13,882	1.7x	1.5x	11.1x	9.8x	22.3x	18.6x
Penske	\$ 45.10	3,832	9,799	0.4x	0.4x	12.1x	12.5x	8.7x	8.4x
Mean				1.6x	1.5x	10.7x	10.0x	16.2x	14.5x
Median				1.4x	1.3x	11.1x	9.9x	15.6x	14.3x
Communications / Infrastructure									
Verizon	\$ 49.35	\$203,914	\$322,612	2.5x	2.5x	6.8x	6.7x	10.8x	10.5x
AT&T	\$ 32.70	201,040	316,370	2.0x	2.0x	6.2x	6.1x	9.6x	9.4x
Cisco Systems	\$ 44.29	213,368	179,051	3.6x	3.5x	10.4x	10.1x	16.4x	15.0x
T-Mobile	\$ 60.51	51,701	81,391	1.9x	1.8x	6.9x	6.4x	18.1x	14.8x
Sprint	\$ 5.61	22,457	54,775	1.7x	1.7x	4.8x	4.6x	14.6x	NM
Hitachi	¥ 801.60	35,408	49,902	0.6x	0.6x	4.8x	4.7x	9.7x	9.0x
Toshiba	¥ 293.0	17,460	23,937	0.7x	0.7x	14.0x	13.3x	1.6x	4.1x
Conduent	\$ 19.46	4,096	5,632	1.0x	1.0x	7.8x	7.4x	18.6x	16.1x
Mean				1.8x	1.7x	7.7x	7.4x	12.4x	11.3x
Median				1.8x	1.7x	6.8x	6.5x	12.7x	10.5x
Aggregate Mean				1.8x	1.6x	10.0x	9.1x	17.0x	14.1x
Aggregate Median				1.1x	1.1x	8.9x	8.4x	13.0x	11.6x

Source: FactSet, SEC filings and third party providers. Values in U.S. Dollars. Share prices shown in local currencies.

(1) Denotes limited equity research coverage.

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Partnership with Sangyo Sosei Advisory Inc.



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- Fairness opinions

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- Project finance advisory
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- Specialized opinions
- Independent capital markets advice

>20 assignments

ASSET MANAGEMENT

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- GCA Sustainable Growth Fund
- GCA Emerging Markets Sustainable Growth Fund

(1) As of April 30, 2018

Highly Experienced Partners Supported by 55 Professionals

Jeff McDermott



Managing Partner
New York
+1 212 946 3940
jeff@greentechcapital.com

- > 30+ years of experience
- > >150 completed transactions
- > Founder and head of advisory business
- > Large industrials and energy companies
- > Broad coverage of senior leaders

Derek Bentley



Partner
New York
+1 212 946 3948
dbentley@greentechcapital.com

- > 15+ years of experience
- > >35 completed transactions
- > Renewable energy assets
- > Distributed generation Water

Laurent Dallet



Partner
Zürich
+41 44 578 3917
laurent@greentechcapital.com

- > 15+ years of experience
- > >30 completed transactions
- > Renewable energy assets
- > Distributed energy production
- > Energy efficiency and services

PJ Deschenes



Partner
New York
+1 212 946 3362
pjdeschenes@greentechcapital.com

- > 15+ years of experience
- > >30 completed transactions
- > Renewable energy assets
- > Power infrastructure services
- > Renewable energy value chain
- > Environmental services

Michael Horwitz



Partner
San Francisco
+1 415 697 1561
mhorwitz@greentechcapital.com

- > 20+ years of experience
- > >30 completed transactions
- > Energy software and services
- > Energy efficiency
- > Renewable energy
- > Smart grid

Karen Mozes Laton



Partner & Head of Marketing
New York
+1 212 946 3375
karen@gcainvest.com

- > 20+ years of experience
- > Chief Operating Officer of GCA Investment Management

Jim Long



Partner
Zürich
+41 79 510 3920
jim@greentechcapital.com

- > 25+ years of experience
- > >75 completed transactions
- > Energy companies
- > Utilities

Steve Megyery



Partner
New York
+1 212 946 3949
steve@greentechcapital.com

- > 15+ years of experience
- > >30 completed transactions
- > Head of Private Placements
- > Cleantech
- > Power infrastructure

Diego Pignatelli



Partner
Zürich
+41 44 578 3941
diego@greentechcapital.com

- > 30+ years of experience
- > >60 completed transactions
- > European coverage
- > Industrials and energy companies
- > Utilities

Damien Sauer



Partner
Zürich
+41 44 578 3914
damien@greentechcapital.com

- > 20+ years of experience
- > >50 completed transactions
- > Energy efficiency
- > Power infrastructure
- > Renewable energy value chain
- > Smart grid

Rob Schultz



Partner & COO
New York
+1 212 946 3950
robert@greentechcapital.com

- > 25+ years of experience
- > Chief Operating Officer
- > Chief Compliance Officer

David Smith



Partner & Portfolio Manager
New York
+1 212 946 2231
david@gcainvest.com

- > 20+ years of experience
- > Chief Investment Officer
- > Portfolio Manager of GCA Sustainable Growth Long-Only Fund

Duncan Williams



Partner
San Francisco
+1 415 697 1560
duncan@greentechcapital.com

- > 20+ years of experience
- > >40 completed transactions
- > Advanced transportation
- > Industrial IoT & software
- > Environmental services
- > Advanced building products
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