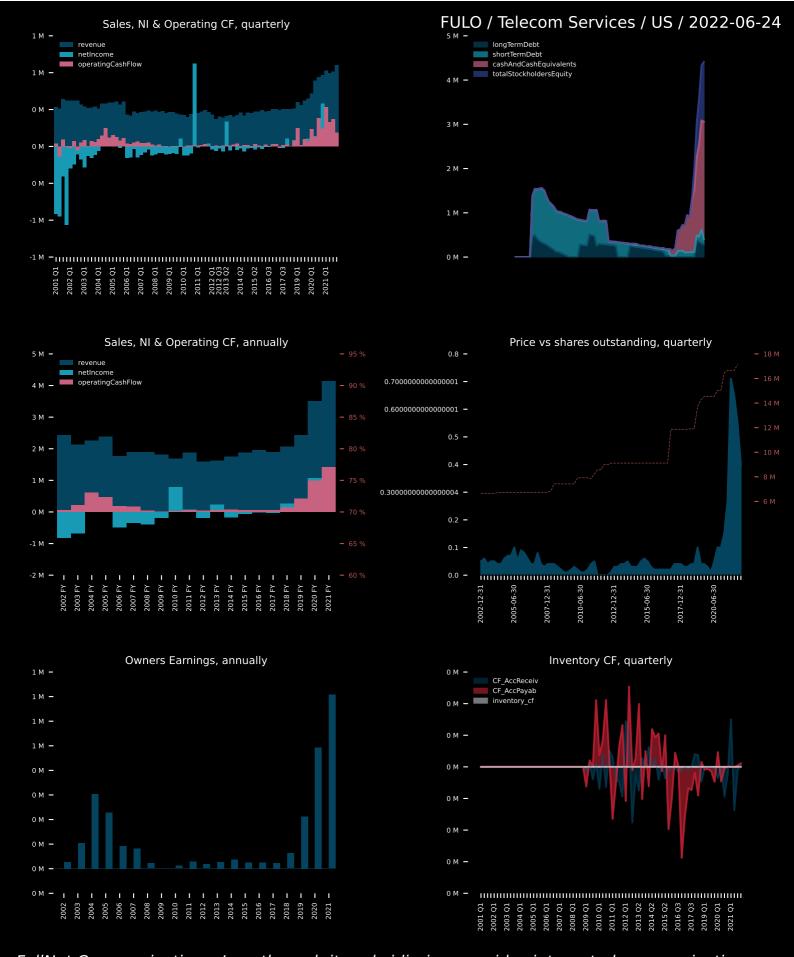
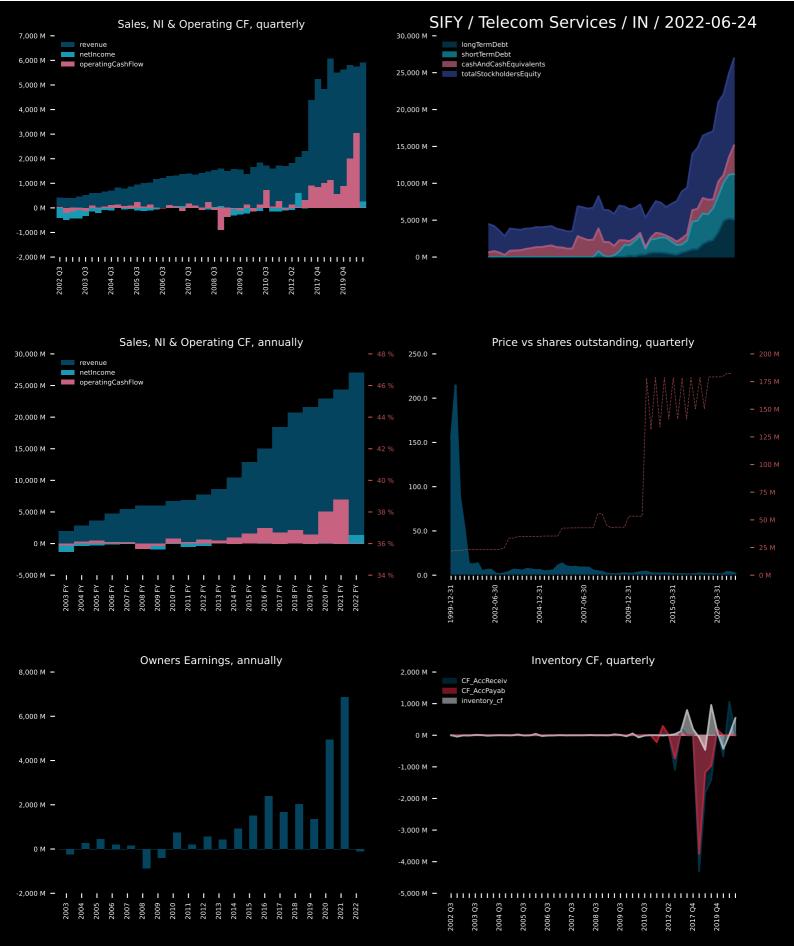


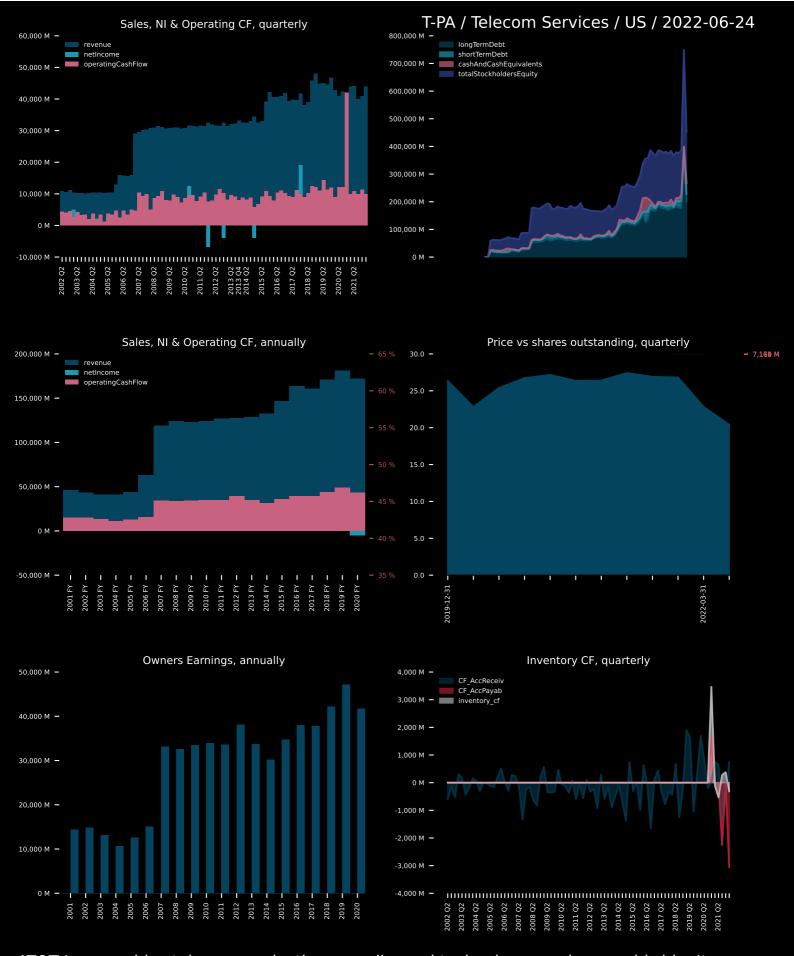
Oi S.A., a switched fixed-line telephony services concessionaire, provides telecommunication services in Brazil. The company offers fixed telephony services, including voice, data communication, and pay TV services; local and intraregional long-distance carrier services; domestic and international long-distance services; mobile telecommunications and corporate solutions; and maintenance, and repair services. It also provides call center and telemarketing, Internet, network, and Wi-Fi Internet services; and financial, and payment and credit system services. In addition, the company engages in the investment management activities, as well as raising funds in the international market. It serves residential, subscription and prepaid, mobile broadband, small, medium-sized, and large corporate customers. The company was formerly known as Brasil Tologom S.A. and changed its name to Oi S.A. in February 2012. Oi S.A. was



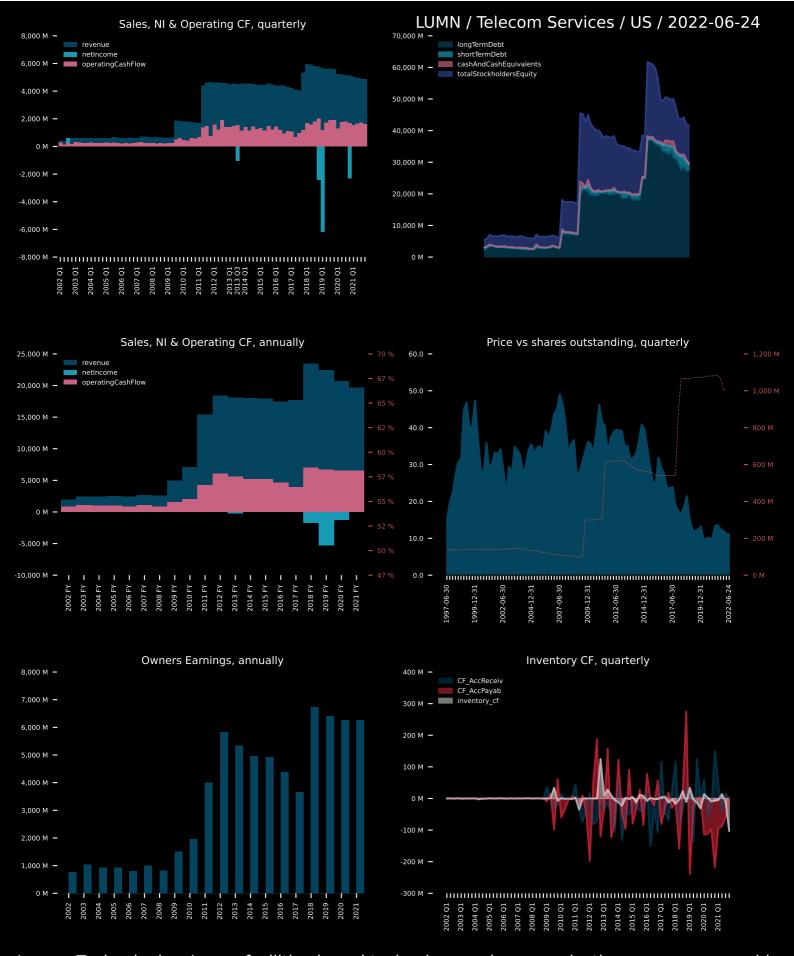
FullNet Communications, Inc., through its subsidiaries, provides integrated communications services to individuals, businesses, organizations, educational institutions, and governmental agencies in the United States. It offers mass notification services using text messages and automated telephone calls; carrier-neutral equipment colocation services; Internet access, and web hosting and related services; customized live help desk outsourcing services; and voice and data solutions. The company was formerly known as CEN-COM of Oklahoma, Inc. and changed its name to FullNet Communications, Inc. in December 1995. FullNet Communications, Inc. was incorporated in 1995 and is based in Oklahoma City, Oklahoma.



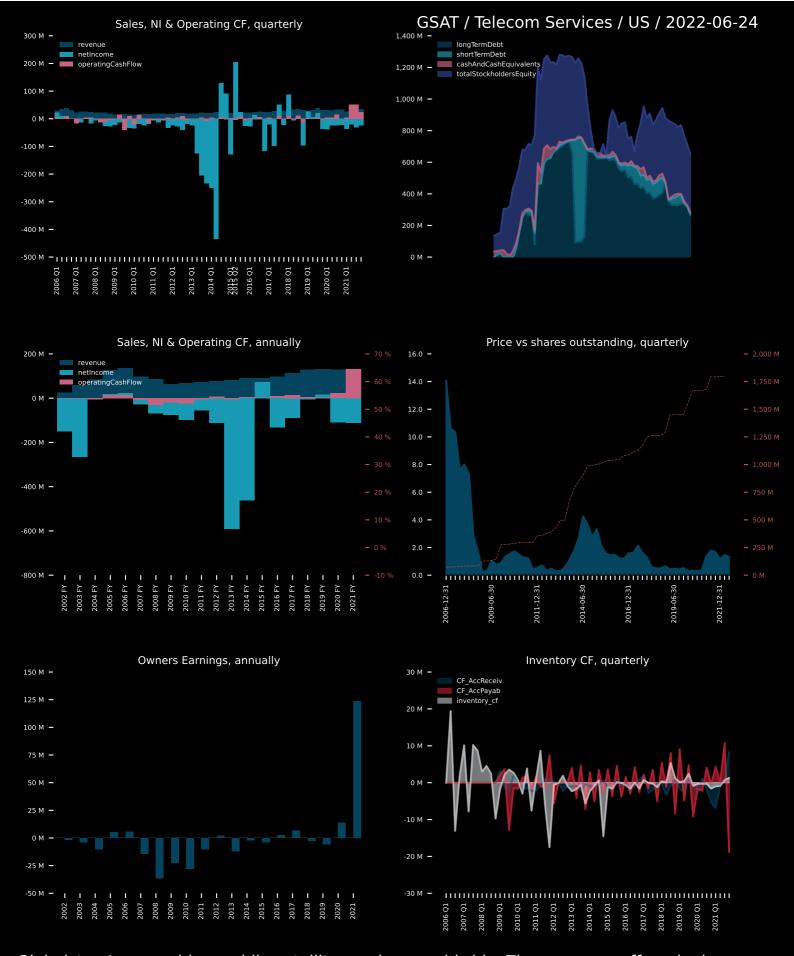
Sify Technologies Limited provides integrated ICT solutions and services in India and internationally. It operates through five segments: Network Centric Services, Data Center Services, Cloud and Managed Services, Technology Integration Services, and Applications Integration Services. The Network Centric Services segment offers internet, internet protocol and multi-protocol label switching virtual private network, SDWAN, managed Wi-Fi, internet of things, wholesale and retail voice, network managed, application to person, unified communication as a service, and proactive monitoring and management of the network and devices. The Data Center Services segment provides co-location services; and managed data center services, such as storage and back-up management, performance monitoring, infrastructure monitoring, and management, notwork availability, server load balancing



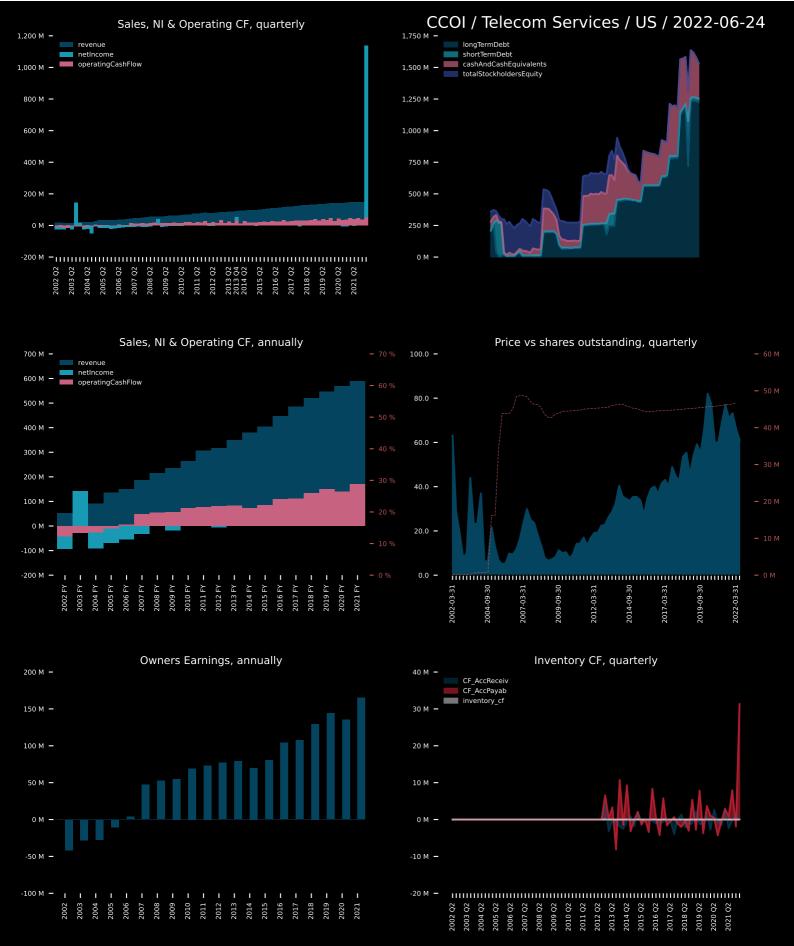
AT&T Inc. provides telecommunications, media, and technology services worldwide. Its Communications segment offers wireless voice and data communications services; and sells handsets, wireless data cards, wireless computing devices, and carrying cases and hands-free devices through its own company-owned stores, agents, and third-party retail stores. It also provides data, voice, security, cloud solutions, outsourcing, and managed and professional services, as well as customer premises equipment for multinational corporations, small and mid-sized businesses, governmental, and wholesale customers. In addition, this segment offers broadband fiber and legacy telephony voice communication services to residential customers. It markets its communications services and products under the AT&T, Cricket, AT&T PREPAID, and



Lumen Technologies, Inc., a facilities-based technology and communications company, provides various integrated products and services under the Lumen, Quantum Fiber, and CenturyLink brands to business and residential customers in the United States and internationally. The company operates in two segments, Business and Mass Markets. It offers compute and application services, such as cloud services, IT solutions, unified communication and collaboration solutions, colocation and data center services, content delivery services, and managed security services; and IP and data services, including VPN data network, Ethernet, internet protocol (IP), and voice over internet protocol. The company also provides fiber infrastructure services comprising high bandwidth optical wavelength networks; and unlit



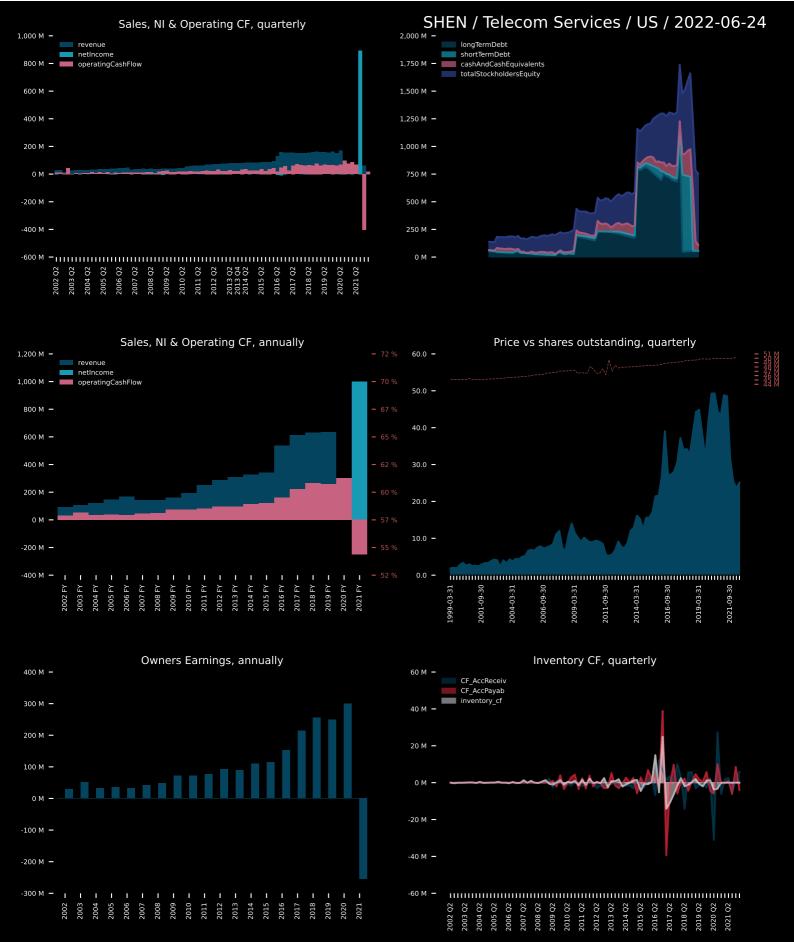
Globalstar, Inc. provides mobile satellite services worldwide. The company offers duplex two-way voice and data products, including mobile voice and data satellite communications services and equipment for remote business continuity, recreational usage, safety, emergency preparedness and response, and other applications; fixed voice and data satellite communications services and equipment at industrial, commercial, and residential sites, as well as rural villages and ships; and data modem services and equipment. It also provides SPOT consumer retail products, such as SPOT satellite GPS messenger for personal tracking, emergency location, and messaging solutions; and SPOT Trace, an anti-theft and asset tracking device. In addition, the company offers commercial Internet of Things one-way transmission products to track carea containers and rail care, as well as to monitor utility meters, and oil and



Cogent Communications Holdings, Inc., through its subsidiaries, provides high-speed Internet access, private network, and data center colocation space services in North America, Europe, Asia, South America, Australia, and Africa. The company offers on-net Internet access and private network services to law firms, financial services firms, and advertising and marketing firms, as well as heath care providers, educational institutions and other professional services businesses, other Internet service providers, telephone companies, cable television companies, Web hosting companies, media service providers, mobile phone operators, content delivery network companies, and commercial content and application service providers. It also provides Internet access and private network services to customers that are not located in buildings directly connected to its network; and on not services to customers located in buildings that are



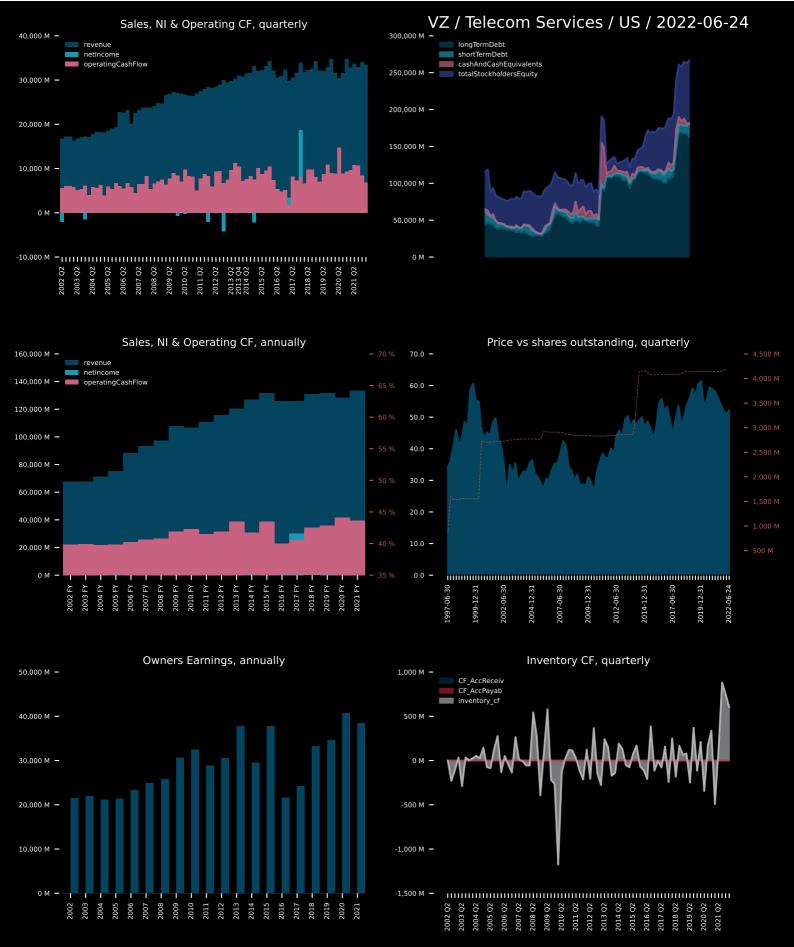
Loral Space & Communications Inc., a satellite communications company, offers satellite-based communications services to the broadcast, telecom, corporate, and government customers worldwide. As of December 31, 2019, the company provided satellite services to its customers through a fleet of 16 in-orbit geostationary satellites; and owned the Canadian Ka-band payload on the ViaSat-1 satellite. It also offers video distribution and direct-to-home (DTH) video, as well as end-to-end communications services using satellite and hybrid satellite-ground networks; and broadcast services, including DTH, video distribution and contribution, and satellite transmission services for the broadcast of video news, sports, and live event coverage. In addition, the company provides telecommunication carrier and integrator services; maritime



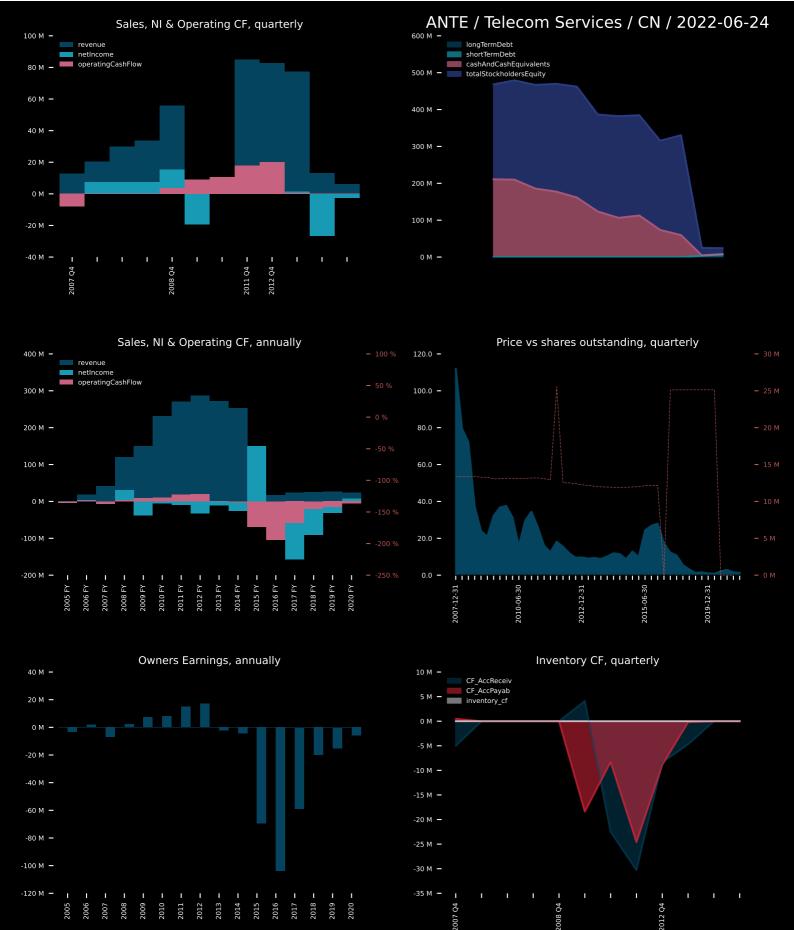
Shenandoah Telecommunications Company, together with its subsidiaries, provides a range of broadband communication services and cell tower colocation space in the Mid-Atlantic portion of the United States. Its Broadband segment offers broadband, video, and voice services to residential and commercial customers in Virginia, West Virginia, Maryland, Pennsylvania, and Kentucky, via hybrid fiber coaxial cable under the Shentel brand, fiber optic services under the Glo Fiber brand, and fixed wireless network services under the Beam brand name. This segment leases fiber and provides Ethernet and wavelength fiber optic services. In addition, the company offers voice and digital subscriber line telephone services. The company's Tower segment owns 220 cell towers and leases colocation space on the towers. Shenandoah Telecommunications



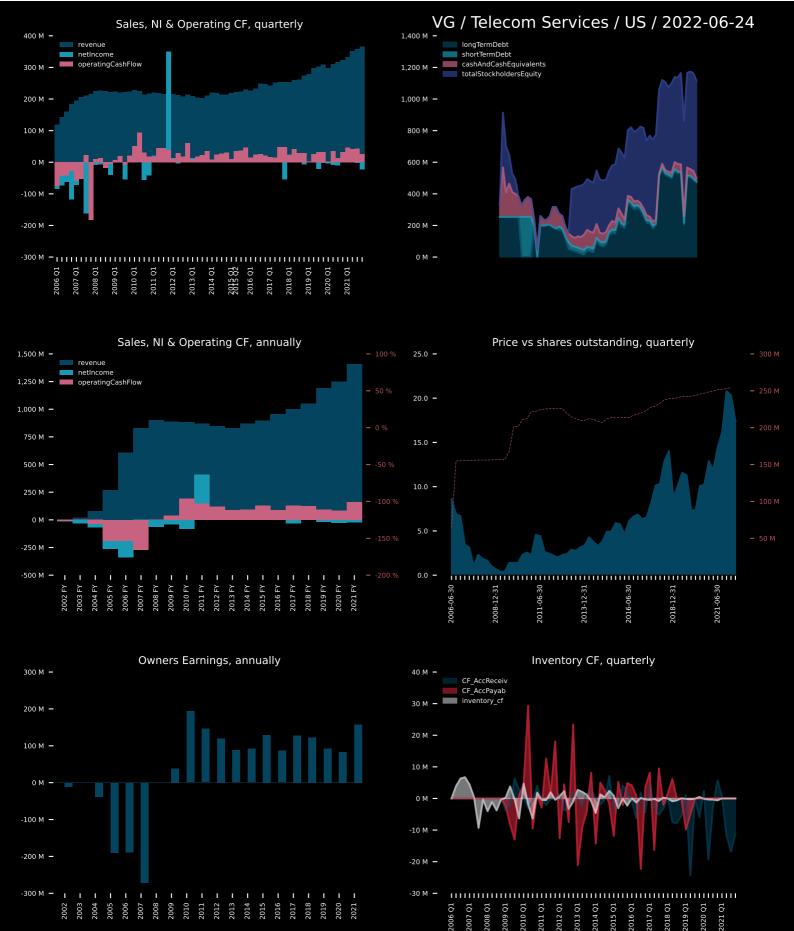
Voip-Pal.com Inc. owns and develops a portfolio of Voice-over-Internet Protocol services in the United States. The company offers classification and routing of communications over various networks and geographically distributed nodes; lawful interception of such communications; enhanced emergency calling support services; mobile gateways; uninterrupted transmissions during endpoint changes; and metering and billing, including the reselling of white label telecommunication services. It serves telephony system vendors, network suppliers, and retail and wholesale carriers. The company was formerly known as VOIP MDI.com. and changed its name to Voip-Pal.com Inc. in September 2006. Voip-Pal.com Inc. was incorporated in 1997 and is based in Waco, Texas.



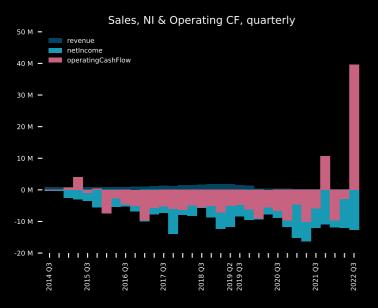
Verizon Communications Inc., through its subsidiaries, offers communications, technology, information, and entertainment products and services to consumers, businesses, and governmental entities worldwide. Its Consumer segment provides postpaid and prepaid service plans; internet access on notebook computers and tablets; wireless equipment, including smartphones and other handsets; and wireless-enabled internet devices, such as tablets, and other wireless-enabled connected devices comprising smart watches. It also provides residential fixed connectivity solutions, such as internet, video, and voice services; and sells network access to mobile virtual network operators. As of December 31, 2021, it had approximately 115 million wireless retail connections, 7 million wireline broadband connections, and 4 million Fios video connections. The company's Business segment provides notwork connectivity products.

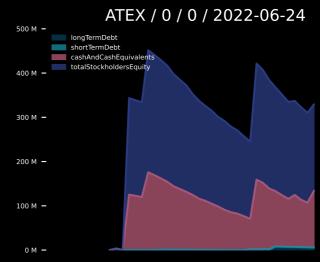


AirNet Technology Inc. operates out-of-home advertising platforms in the People's Republic of China. The company provides advertising time slots in the form of digital TV screens on airplanes; and media contents display in air travel; and gas station media network. It also displays non-advertising content, including comedy clips, movie, TV series, sports, local attractions, reality shows, commentaries, and documentaries. In addition, the company develops and operates outdoor advertising platforms in gas stations, such as LED screens, billboards, and light boxes. Further, it operates CIBN-AirNet channel to broadcast network TV programs to air travelers. The company was formerly known as AirMedia Group Inc. AirNet Technology Inc. was founded in 2005 and is headquartered in Beijing, the People's Republic of China



Vonage Holdings Corp. primarily operates as a cloud communications company in the United States, Canada, the United Kingdom, the European Union, and Asia. It operates in two segments, Vonage Communications Platform and Consumer. The Vonage Communications Platform segment offers programmable, embeddable, and customizable application program interfaces that enable software developers to build communications capabilities, such as messaging and voice calling within their applications; and Vonage Contact Center, a cloud contact center solution. This segment also provides Vonage Business Communications, a cloud-native proprietary technology platform that delivers integrated unified communication services; and Vonage Business Enterprise, a cloud-based platform for mid-market and optorprise systems that provides unified communication and collaboration services, including

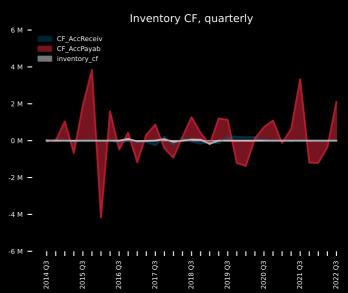






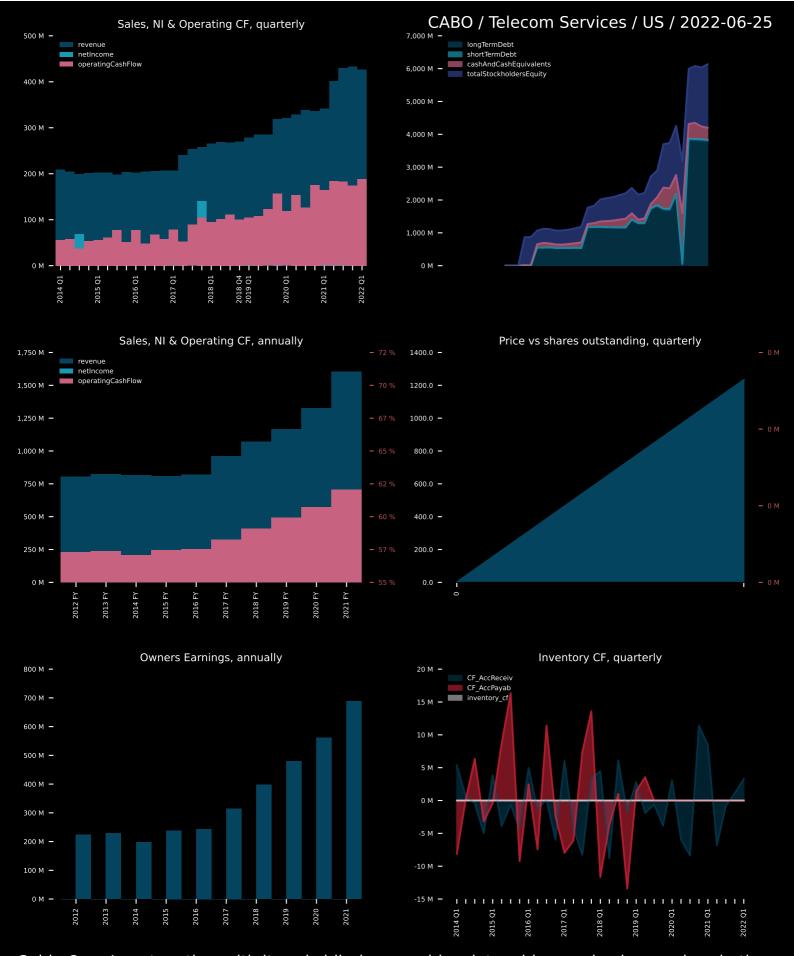




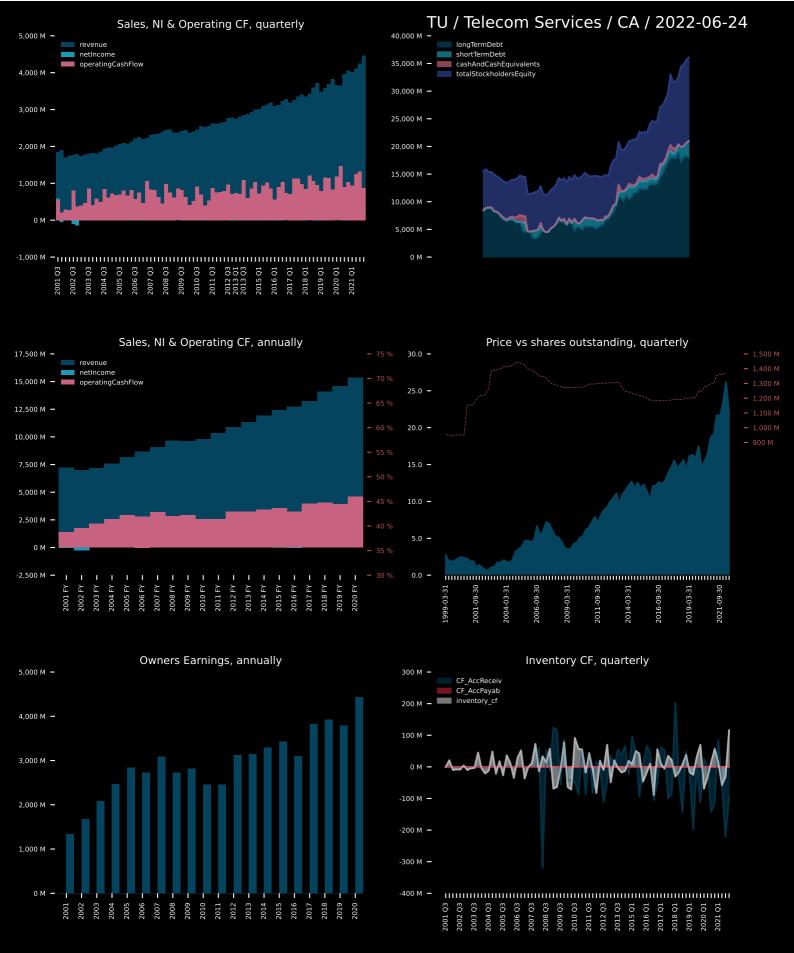




Inventergy Global, Inc., an intellectual property (IP) investment and licensing company, engages in identifying, acquiring, and licensing patented technologies of various technology and small companies. The company acquires portfolios in the telecommunications industry primarily in core network infrastructure and mobile broadband communications segments. Inventergy Global, Inc. is headquartered in Campbell, California.



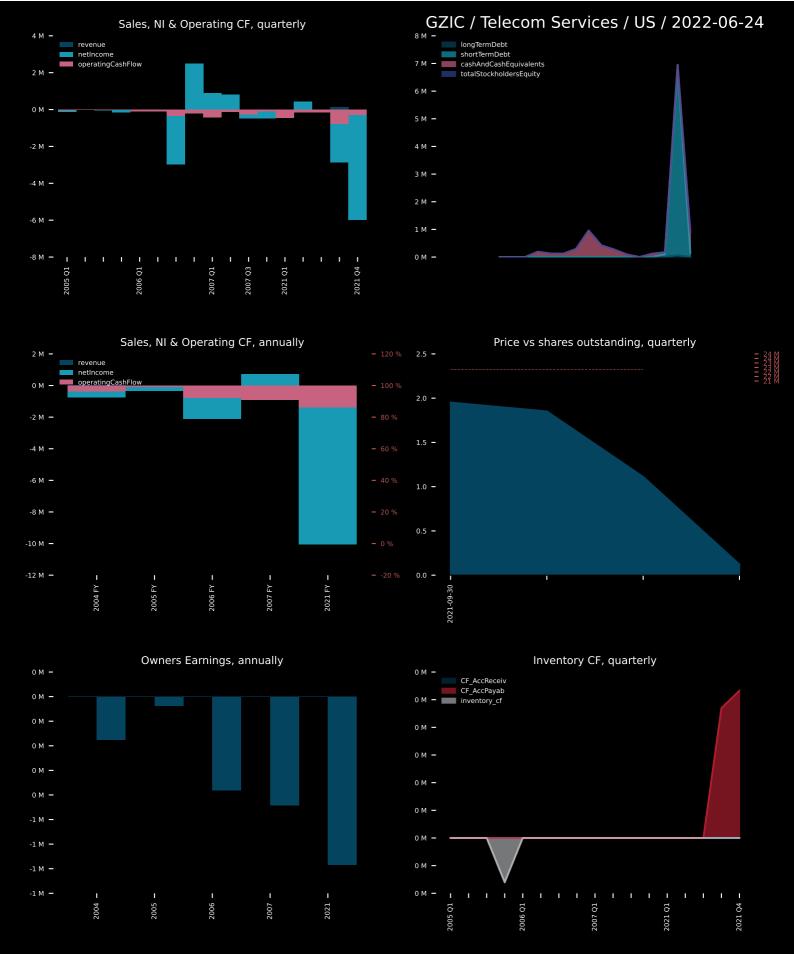
Cable One, Inc., together with its subsidiaries, provides data, video, and voice services in the United States. The company offers residential data services, a service to enhance Wi-Fi signal throughout the home. It also provides residential video services, such as local networks; local community programming that includes governmental and public access; and other channels, as well as digital video services, including national and regional cable networks, music channels, and an interactive and electronic programming guide with parental controls. In addition, the company offers premium channels that offer movies, original programming, live sporting events, and concerts and other features; and advanced video services, such as whole-home DVRs and high-definition set-top boxes, as well as TV Everywhere product, which enables its video customers to stroam various channels and shows to mobile devices and computers



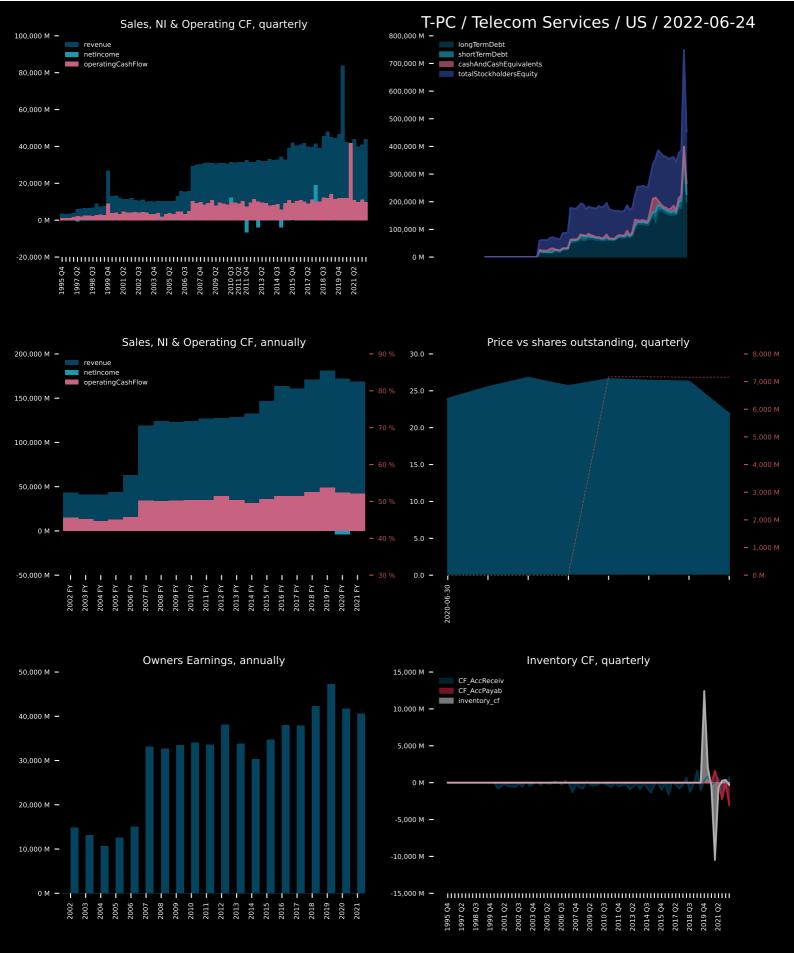
TELUS Corporation, together with its subsidiaries, provides a range of telecommunications and information technology products and services in Canada. It operates through Technology Solutions and Digitally-Led Customer Experiences segments. The Technology Solutions segment offers a range of telecommunications products and services; network revenue; equipment sales from mobile technologies; data services revenues, such as internet protocol; television; hosting, managed information technology, and cloud-based services; customer care and business services; healthcare solutions; and home and business security, agriculture, voice, and other telecommunications services. The Digitally-Led Customer Experiences segment provides digital customer experience and digital-enablement transformation solutions, including artificial intelligence and content management solutions. It has 16.9 million subscriber connections



As of December 9, 2020, PhoneBrasil International, Inc. (OTCPK: PHBR) operates as a subsidiary of DR Shell LLC.



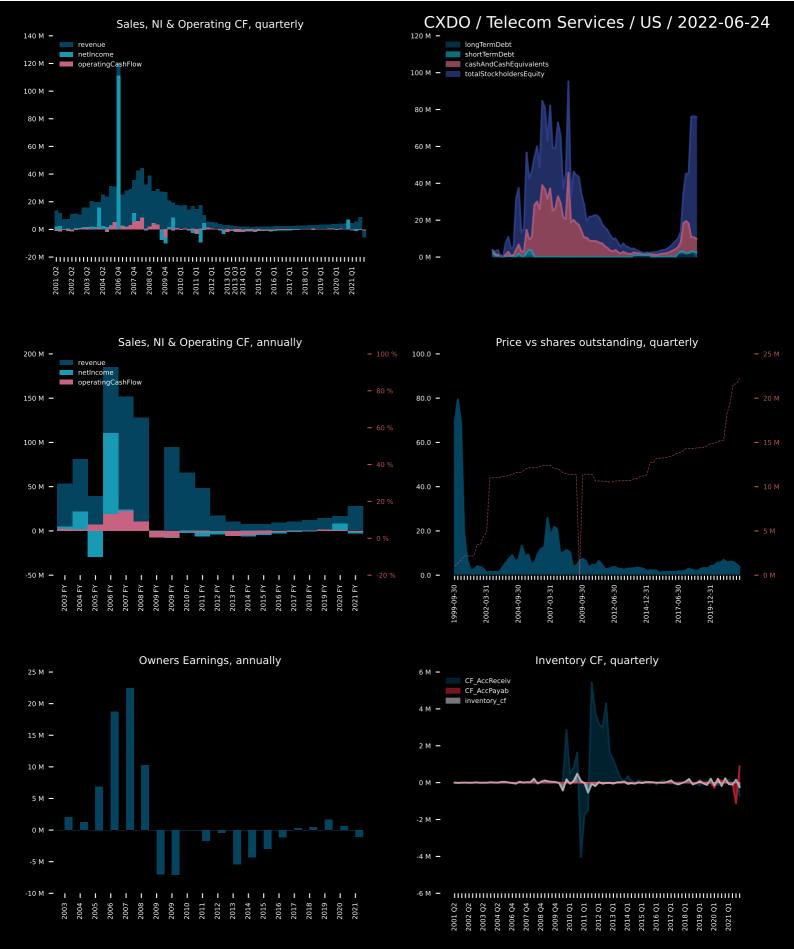
GZ6G Technologies Corp. provides enterprise smart technology solutions worldwide. It offers enterprise level IT and wireless network technology consulting, and business technology infrastructure strategy and planning services, as well as IT networking hardware and security cloud software products and services. The company also provides data center and IOT software development services, as well as digital marketing, advertising, and sponsorship services. Its customers include federal government, stadiums, airports, universities, smart cities, and the entertainment industry. The company is headquartered in Las Vegas, Nevada.



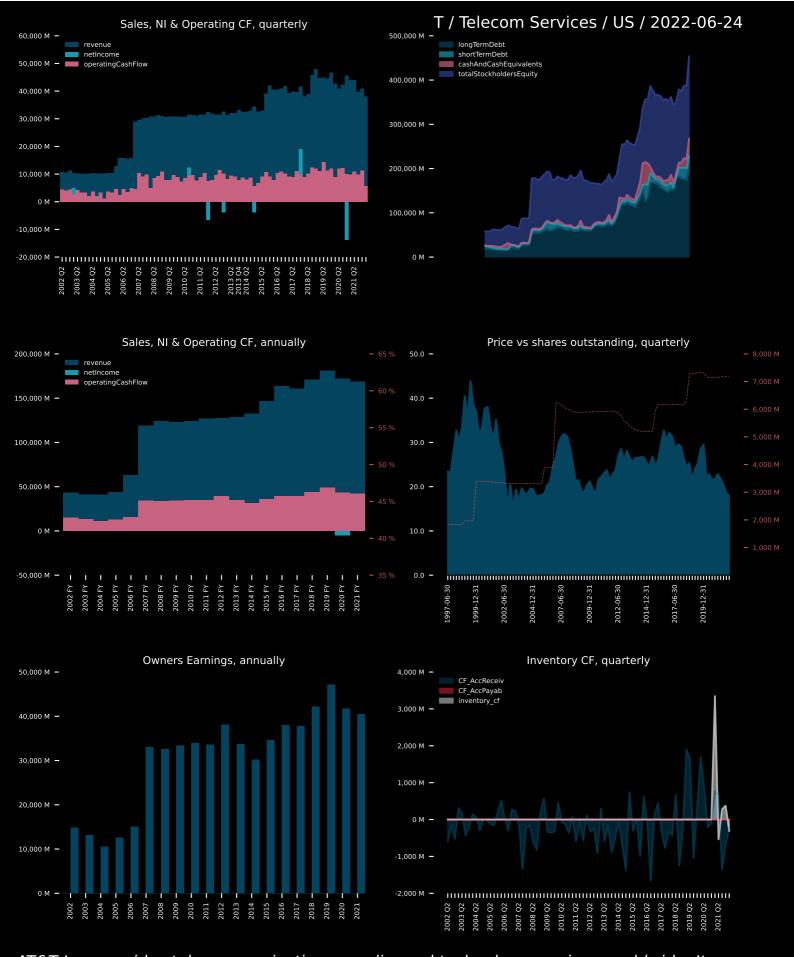
AT&T Inc. provides telecommunications, media, and technology services worldwide. Its Communications segment offers wireless voice and data communications services; and sells handsets, wireless data cards, wireless computing devices, and carrying cases and hands-free devices through its own company-owned stores, agents, and third-party retail stores. It also provides data, voice, security, cloud solutions, outsourcing, and managed and professional services, as well as customer premises equipment for multinational corporations, small and mid-sized businesses, governmental, and wholesale customers. In addition, this segment offers broadband fiber and legacy telephony voice communication services to residential customers. It markets its communications services and products under the AT&T, Cricket, AT&T PREPAID, and



RADCOM Ltd. provides 5G ready cloud-native network intelligence and service assurance solutions for telecom operators or communication service providers (CSPs). It offers RADCOM ACE, including RADCOM Service Assurance, a cloud-native, 5G-ready, and virtualized service assurance solutions, which allows telecom operators to gain end-to-end network visibility and customer experience insights across all networks; RADCOM Network Visibility, a cloud-native network packet broker and filtering solution that allows CSPs to manage network traffic at scale across multiple cloud environments, and control the visibility layer to perform analysis of select datasets; and RADCOM Network Insights, a business intelligence solution that offers insights for multiple use cases enabled by data captured and correlated through RADCOM Network Visibility and RADCOM Service Assurance. The company also provides solutions for mobile and fixed



Crexendo, Inc. provides cloud communication, unified communications as a service, call center, collaboration, and other cloud business services for businesses in the United States, Canada, and internationally. It operates through two segments, Cloud Telecommunications and Web Services. The Cloud Telecommunications segment provides telecommunications services that transmit calls using Internet protocol (IP) or cloud technology, which converts voice signals into digital data packets for transmission over the Internet or cloud; and resells broadband Internet services. This segment is also involved in the sale and lease of cloud telecommunications equipment. In addition, it offers hardware, software, and unified communication solutions for businesses using IP or cloud technology over high-speed internet connection through various devices and user interfaces, such as deskton phones and/or mobile, and deskton applications.



AT&T Inc. provides telecommunications, media, and technology services worldwide. Its Communications segment offers wireless voice and data communications services; and sells handsets, wireless data cards, wireless computing devices, and carrying cases and hands-free devices through its own company-owned stores, agents, and third-party retail stores. It also provides data, voice, security, cloud solutions, outsourcing, and managed and professional services, as well as customer premises equipment for multinational corporations, small and mid-sized businesses, governmental, and wholesale customers. In addition, this segment offers broadband fiber and legacy telephony voice communication services to residential customers. It markets its communications services and products under the AT&T, Cricket, AT&T PREPAID, and

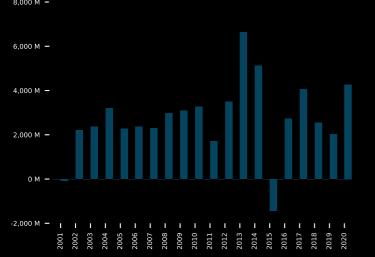


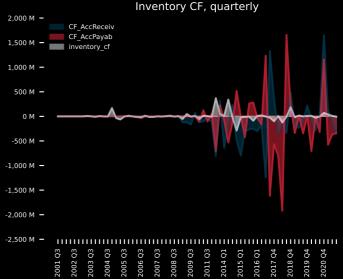
Altice USA, Inc., together with its subsidiaries, provides broadband communications and video services in the United States, Canada, Puerto Rico, and the Virgin Islands. It offers broadband, video, telephony, and mobile services to approximately five million residential and business customers. The company's video services include delivery of broadcast stations and cable networks; over the top services; video-on-demand, high-definition channels, digital video recorder, and pay-per-view services; and platforms for video programming through mobile applications. It also provides voice over Internet protocol telephone services; and mobile services, such as data, talk, and text. In addition, the company offers Ethernet, data transport, IP-based virtual private networks, Internet access, and telephony services; hosted telephony



Radius Global Infrastructure, Inc., together with its subsidiaries, engages in the acquisition and rental of telecom real property interests and contractual rights. The company leases wireless towers or antennae, and other communications infrastructure. As of December 31, 2021, it had interests in 8,506 leases situated on 8,186 communications sites located in the United States and 19 other countries. Radius Global Infrastructure, Inc. was founded in 2010 and is based in Bala Cynwyd, Pennsylvania.







N/A



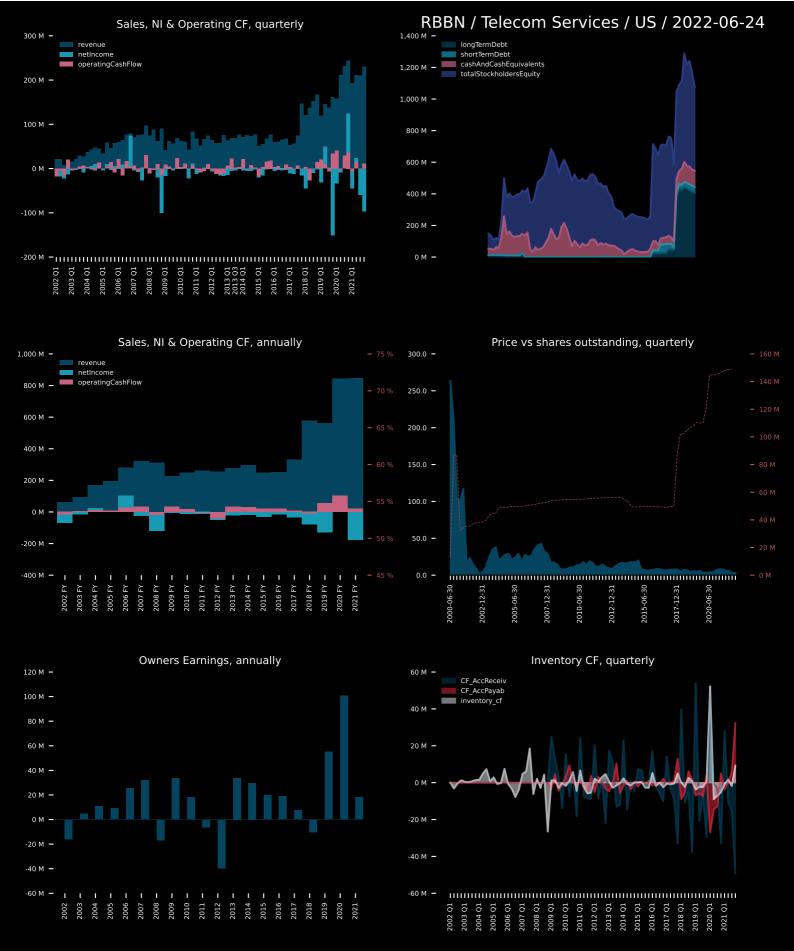
Liberty Broadband Corporation engages in the communications businesses. It operates through GCI Holdings and Charter segments. The GCI Holdings segment provides a range of wireless, data, video, voice, and managed services to residential customers, businesses, governmental entities, and educational and medical institutions primarily in Alaska under the GCI brand. The Charter segment offers subscription-based video services comprising video on demand, high-definition television, and digital video recorder service; local and long-distance calling, voicemail, call waiting, caller ID, call forwarding, and other voice services, as well as international calling services; and Spectrum TV. It also provides internet services, including an in-home Wi-Fi product that provides customers with high-performance wireless routers and



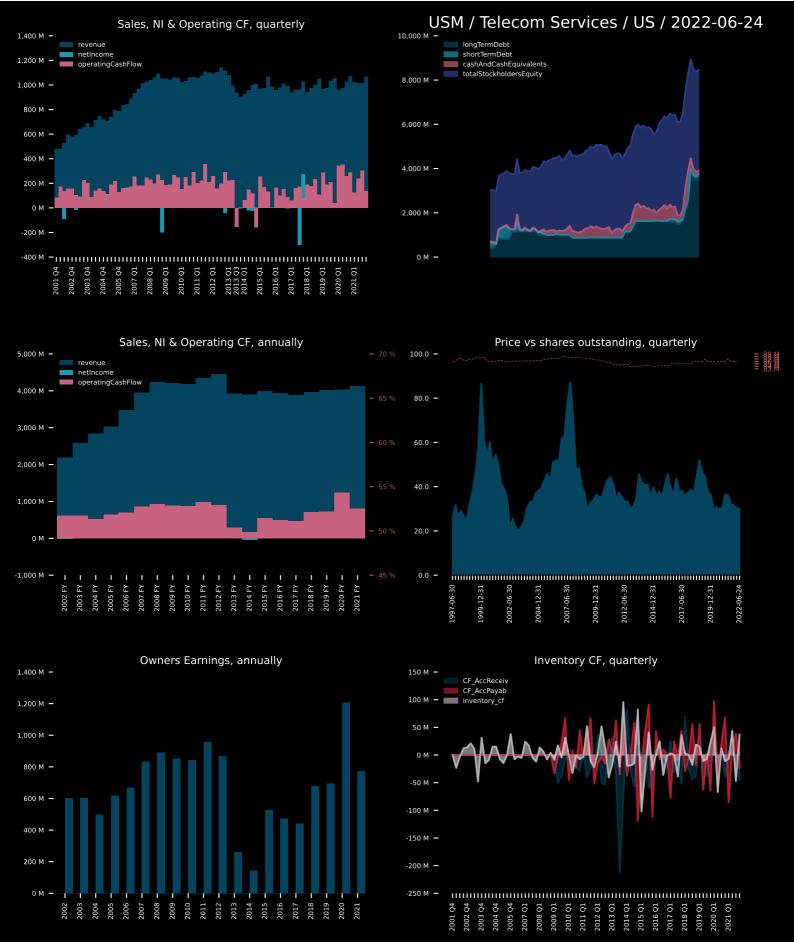
provides retail and wholesale telecommunication services primarily to small and mid-sized business. It operates through two segments, Hosted Services and Mobile Services. The company operates as a licensed Internet telephony service provider and global cloud communications service provider operating its own as a service cloud platform. Its services include voice termination/origination, API services, messaging, cellular, IoT mobile data solutions, SD-WAN, private LTE, and a range of hosted services through its cloud platform. The company is also involved in the wireless Lifeline resale activities to provide government subsidized cellular services to low-income families in California, Georgia, Kentucky, Maryland, Nevada, Oklahoma, South Carolina, Verment, and Wisconsin, The company is headquartered in Plane, Toxas



Liberty Broadband Corporation engages in the communications businesses. It operates through GCI Holdings and Charter segments. The GCI Holdings segment provides a range of wireless, data, video, voice, and managed services to residential customers, businesses, governmental entities, and educational and medical institutions primarily in Alaska under the GCI brand. The Charter segment offers subscription-based video services comprising video on demand, high-definition television, and digital video recorder service; local and long-distance calling, voicemail, call waiting, caller ID, call forwarding, and other voice services, as well as international calling services; and Spectrum TV. It also provides internet services, including an in-home Wi-Fi product that provides customers with high-performance wireless routers and



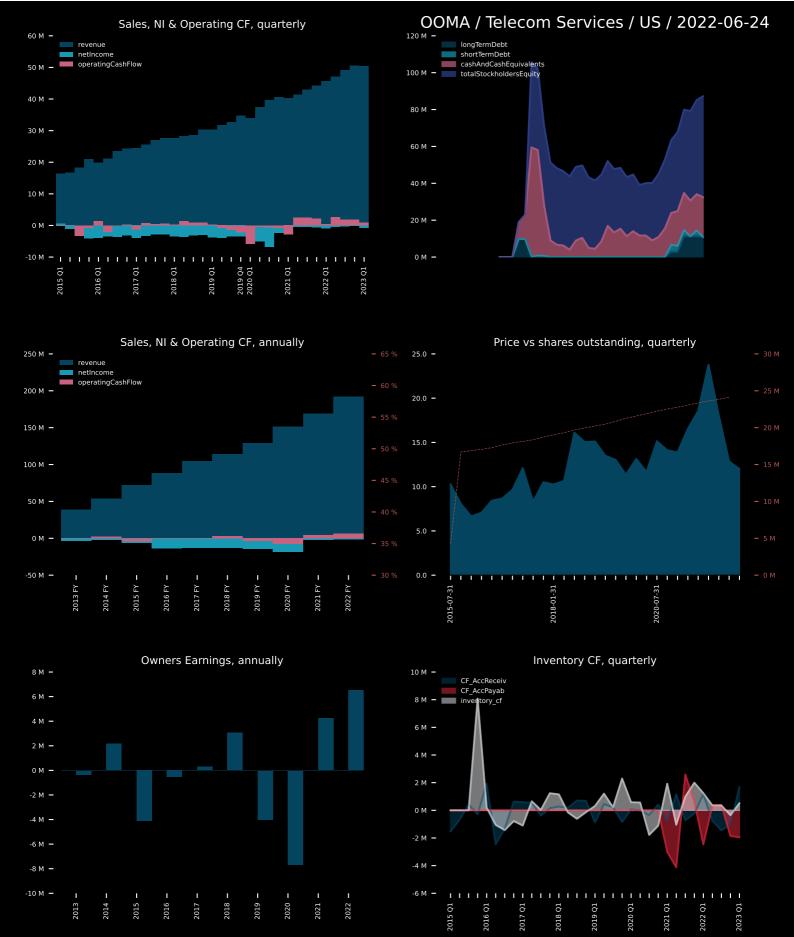
Ribbon Communications Inc. provides communications technology in the United States, Europe, the Middle East, Africa, the Asia Pacific, and internationally. It operates through two segments, Cloud and Edge, and IP Optical Networks. The Cloud and Edge segment provides software and hardware products; and solutions and services for enabling voice over internet protocol communications, voice over long-term evolution, and voice over 5G communications and unified communications and collaboration. It also offers session border controller and network transformation products. This segment serves private, public, or hybrid cloud infrastructures, as well as data centers, enterprise premises, and service provider networks. It also provides multiple solutions for VoIP, VoLTE, VoNR, and UC&C in network, on-premises, or via the telco



United States Cellular Corporation provides wireless telecommunications services in the United States. The company offers wireless services, including voice, messaging, and data services. It also provides devices, such as smartphones and other handsets, tablets, wearables, mobile hotspots, routers, and internet of things devices. In addition, the company offers various accessories, such as cases, screen protectors, chargers, and memory cards; and consumer electronics, including audio, home automation, and networking products; as well as offers option to purchase devices and accessories under installment contracts. Further, the company offers roaming, wireless eligible telecommunications carrier, and wireless tower rental services. It serves consumer, business, and government customers with 5.0 million connections, including



Telephone and Data Systems, Inc., a telecommunications company, provides communications services in the United States. It operates through two segments: UScellular and TDS Telecom. The company offers wireless solutions to consumers and business and government customers, including a suite of connected Internet of things (IoT) solutions, and software applications for monitor and control, business automation/operations, communication, fleet and asset management, smart water solutions, private cellular networks and custom, and end-to-end IoT solutions; wireless priority services and quality priority and preemption options; smartphones and other handsets, tablets, wearables, mobile hotspots, routers, and IoT devices; and accessories, such as cases, screen protectors, chargers, and memory cards, as well as



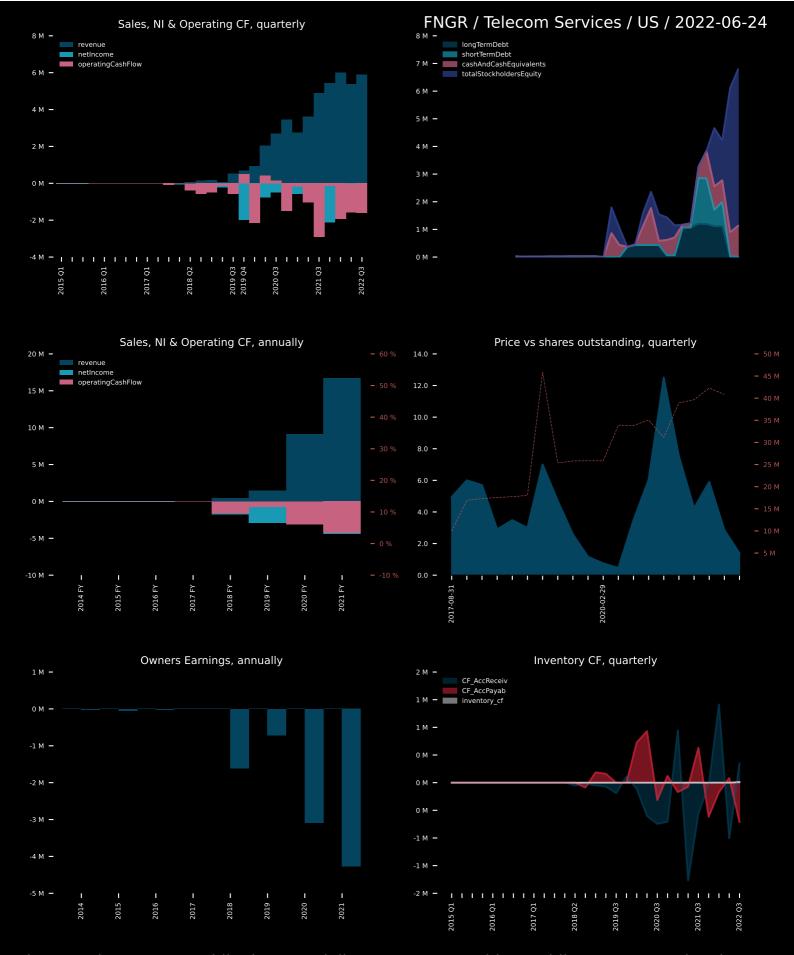
Ooma, Inc. provides communications services and related technologies for businesses and consumers in the United States and Canada. The company's products and services include Ooma Office, a cloud-based multi-user communications system for small and medium-sized businesses; Ooma Office Pro that offers services, including HD video meetings, call recording, enhanced call blocking, and voicemail transcription; Ooma Connect, which delivers fixed wireless internet connectivity; Ooma Managed Wi-Fi, a plug-and-play enterprise-grade Wi-Fi solution; and Ooma Enterprise, a unified-communications-as-a-service solution. It also provides Ooma AirDial, a plain old telephone service; Ooma Telo basic that provides unlimited personal calling within the Unites States; Ooma Premier, a suite of advanced calling features on a monthly or appeal subscription basic; PuroVoice HD, a residential phone services; Ooma Telo



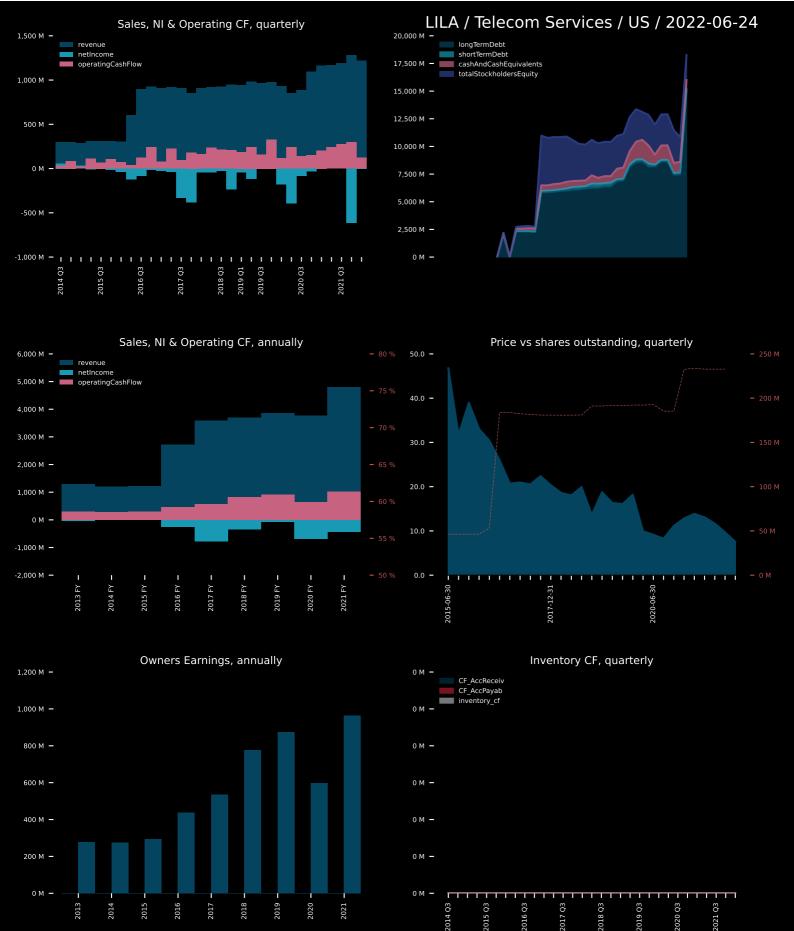
Hammer Technology Holdings invests in financial services and wireless technology. The company develops high speed fixed wireless service for residential, small business, and enterprise clients using its wireless fiber platform, Hammer Wireless AIR, as well as mobility networks, such as 4G/LTE; and over-the-top services comprising voice, SMS, collaboration, and hosting services. The company was formerly known as Hammer Fiber Optics Holdings Corp. The company was incorporated in 2010 and is based in Sarasota, Florida.



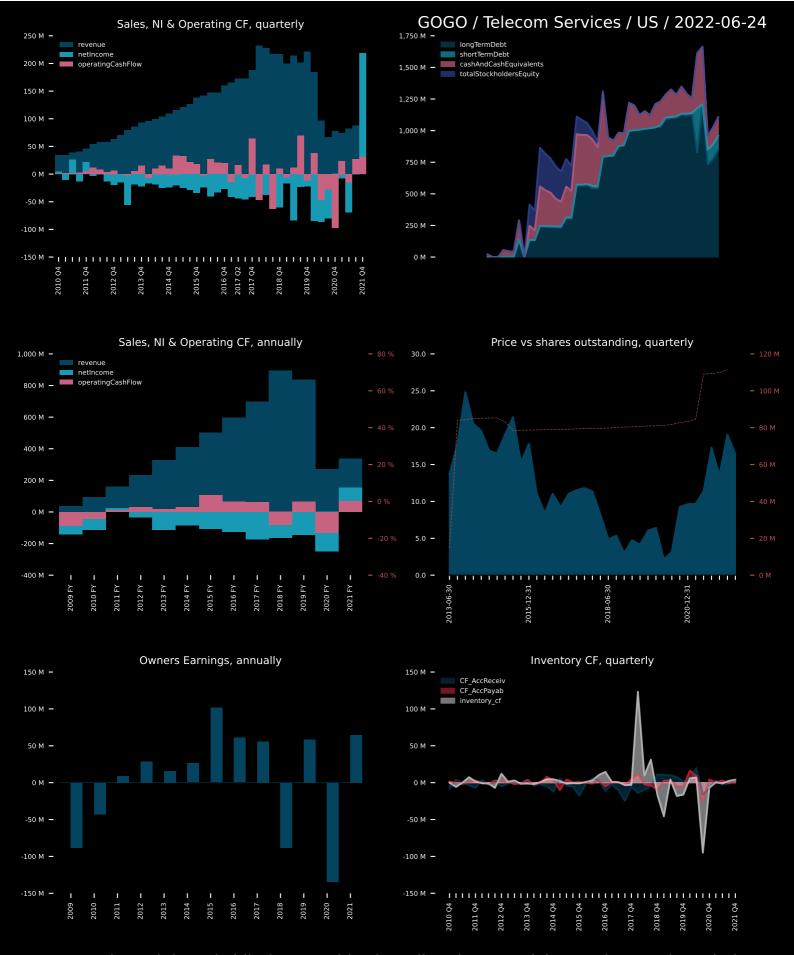
lota Communications, Inc., through its subsidiaries, provides Internet of Things (IoT) solutions. It also provides energy conservation solutions. The company operates through lota Networks, lota Commercial Solutions, Iota Communications, and Iota Holdings. In addition, the company offers delphi360, a wireless connectivity and data analytics platform to integrate with devices and sensors, as well as provides BrightAI, an analytic platform that gathers information from sensor connectivity. Further, it provides IoT-based LED and smart lighting. Additionally, it offers smart building solutions, a platform for data management. Furthermore, the company serves healthcare, commercial real estate, education, utility, retail, and manufacturing industries; and city and municipals. Iota Communications, Inc. is based in Allentown, Pennsylvania.



FingerMotion, Inc., a mobile data specialist company, provides mobile payment and recharge platform solutions in China. The company offers telecommunication providers' products and services, including data plans, subscription plans, mobile phones, and loyalty points redemption services; bulk short message service and multimedia messaging services; and RCS platform, a proprietary business messaging platform that enables businesses and brands to communicate and service their customers on the 5G infrastructure. It also operates Sapientus, a proprietary big data insights platform that deliver data-driven solutions and insights for businesses in the insurance, healthcare, and financial services industries. FingerMotion, Inc. is headquartered in New York, New York.



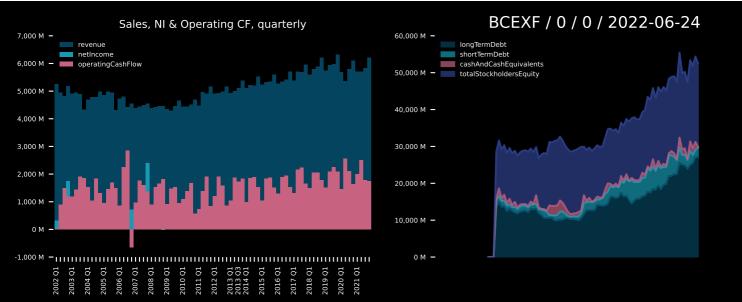
Liberty Latin America Ltd., together with its subsidiaries, provides fixed, mobile, and subsea telecommunications services. The company offers communications and entertainment services, including video, broadband internet, fixed-line telephony, and mobile services to residential and business customers; and business products and services that include enterprise-grade connectivity, data center, hosting, and managed solutions, as well as information technology solutions for small and medium enterprises, international companies, and governmental agencies. It also operates a sub-sea and terrestrial fiber optic cable network that connects approximately 40 markets. The company provides its services in approximately 20 countries in Latin America, the Caribbean, Chile, and Costa Rica under the brands of C&W, VTR, Liberty

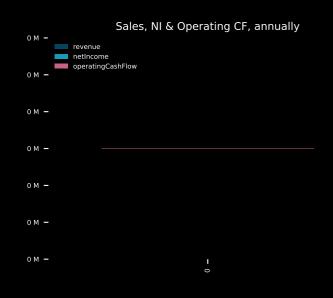


Gogo Inc., through its subsidiaries, provides broadband connectivity services to the aviation industry in the United States and internationally. It operates through Commercial Aviation North America (CA-NA), Commercial Aviation Rest of World (CA-ROW), and Business Aviation (BA) segments. The company design, build and operate air-to-ground networks, engineer and maintain in-flight systems of proprietary hardware and software, and deliver customizable connectivity and wireless entertainment services. It also offers suite of integrated equipment, network, and internet connectivity products and services, as well as includes suite of smart cabin systems for integrated connectivity, in-flight entertainment, and voice solutions. In addition, the company portfolio comprises of in-flight network, in-flight systems, in-flight sorvices, aviation partner support, and production operations functions. Further, the company

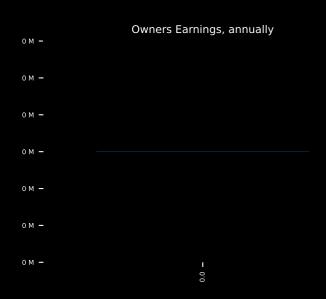


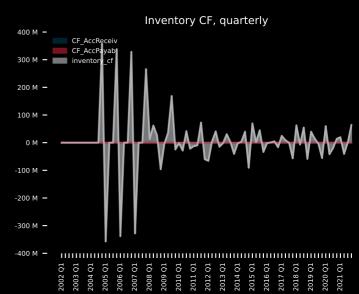
Nuvera Communications, Inc. operates as a diversified communications company in the United States. The company offers broadband Internet access and voice over Internet protocol (VoIP) phone services; and voice services to make and receive telephone calls within a defined local calling area; and network access services to other communication carriers for the use of its facilities to terminate or originate long distance calls on its network. It also provides video services, including commercial TV programming, cable television services, and video-on-demand services; high-speed Internet to business and residential customers; e-mail and managed services comprising web hosting and design, online file back up, and online file storage; directory assistance, operator service, and long-distance private lines; directory





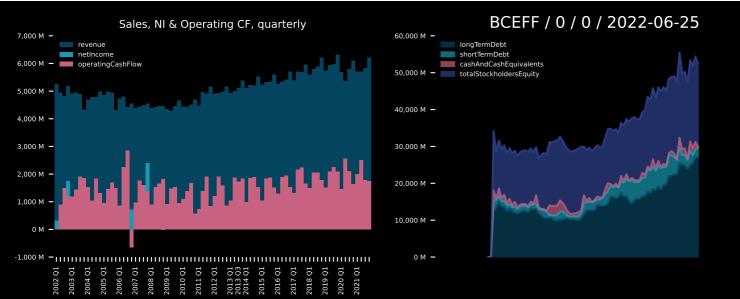






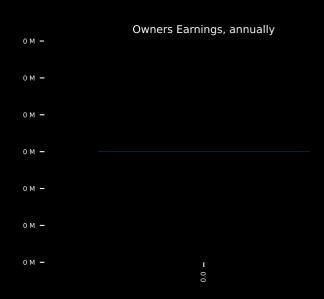


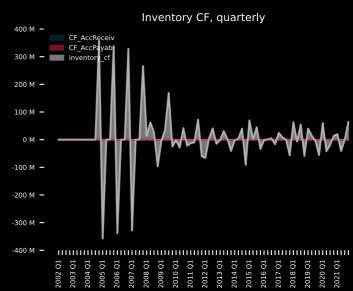
GTT Communications, Inc. provides cloud networking services to multinational enterprises, carriers, and government customers in the United States, Europe, and internationally. The company offers wide area networking, such as software-defined wide area networking, multiprotocol label switching, and virtual private LAN service; high bandwidth-Internet connectivity and IP transit, as well as broadband and wireless Internet access services; managed equipment and security services; and unified communication services consisting of session initiation protocol trunking, cloud unified communication service, and traditional analog voice. It also provides transport services, such as Ethernet services that enable to design network equipment; and video transport services to support broadcast quality transmission of live events, sports entertainment, and nows to media and entertainment industry. In addition

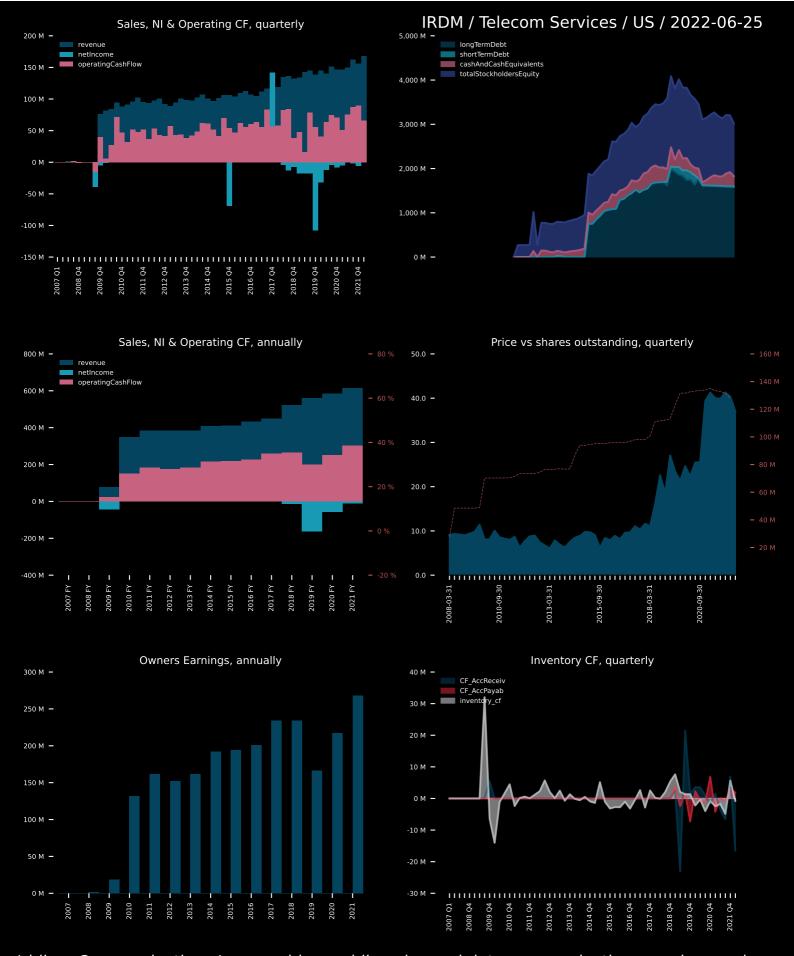












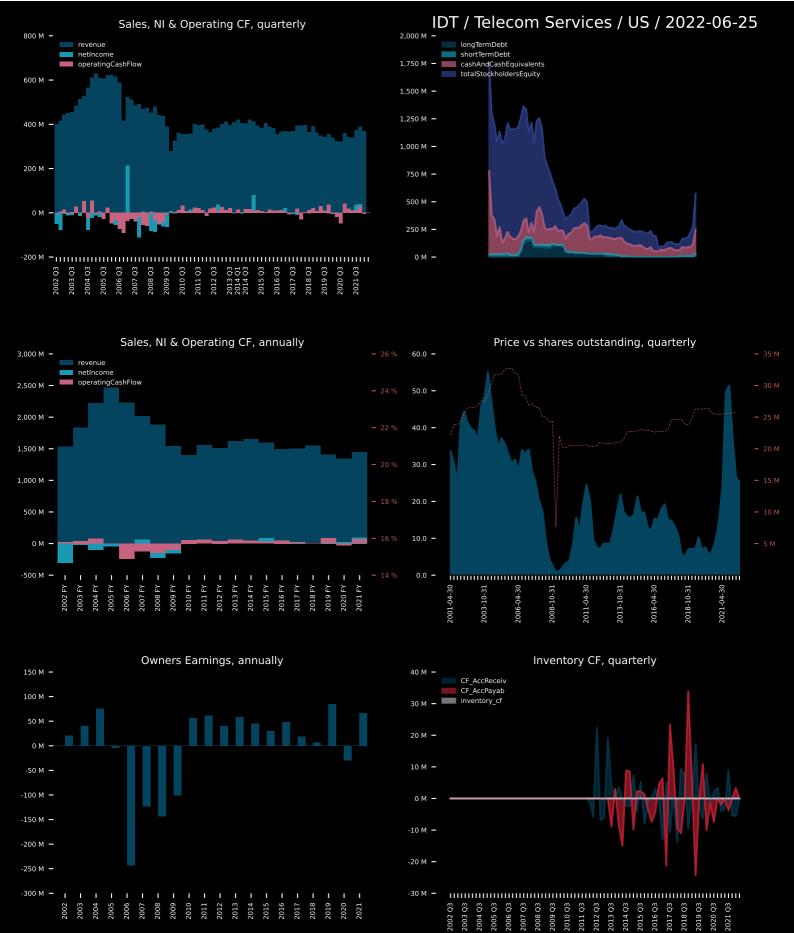
Iridium Communications Inc. provides mobile voice and data communications services and products to businesses, the United States and international governments, non-governmental organizations, and consumers worldwide. The company offers postpaid mobile voice and data satellite communications; prepaid mobile voice satellite communications; push-to-talk; broadband data; and Internet of Things (IoT) services. It also provides hosted payload and other data services, such as satellite time and location services, and inbound connections from the public switched telephone network, short message, subscriber identity module, activation, customer reactivation, and other peripheral services. In addition, the company offers voice and data solutions comprising personnel tracking devices; asset tracking devices for equipment, vehicles, and aircrafts; beyond line of sight aircraft communications applications; maritime



AST SpaceMobile, Inc. operates space-based cellular broadband network for mobile phones. Its SpaceMobile service provides mobile broadband services for users traveling in and out of areas without terrestrial mobile services on land, at sea, or in flight. The company is headquartered in Midland, Texas.



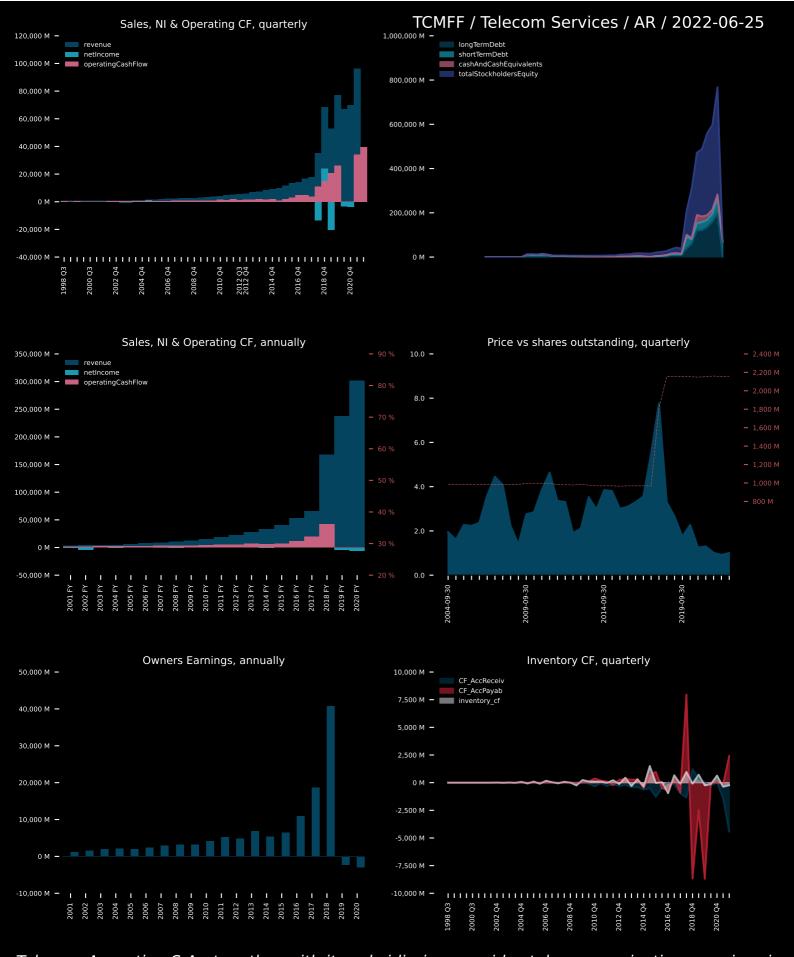
Digerati Technologies, Inc., through its subsidiaries, provides Internet-based telephony products and services through its cloud application platform and session-based communication network in the United States. The company offers Internet broadband, fiber, mobile broadband, and cloud WAN solutions; cloud communication services, including fully hosted IP/PBX, mobile applications, Voice over Internet Protocol (VoIP) transport, SIP trunking, call center applications, auto attendant, voice and web conferencing, call recording, messaging, voicemail to email conversion, integrated mobility applications, and customized VoIP services; and remote network monitoring, data backup, and disaster recovery services, as well as enterprise-class data and connectivity solutions, such as cloud WAN (wide area network) or software-defined WAN, fiber, mobile broadband, and Ethernet over copper services. It primarily serves small to modium sized



IDT Corporation operates in the communications and payment industries in the United States and internationally. The company operates through three segments: Fintech; net2phone-UCaaS (Unified Communications as a Service); and Traditional Communications. The Fintech segment offers international money remittance and related value/payment transfer services under the BOSS Revolution brand name; national retail solutions, such as point of sale network providing payment processing, digital advertising, transaction data, and ancillary services under the NRS brand name. The net2phone-UCaaS segment provides net2phone-UCaaS, a cloud communications service for businesses; and cable telephony services under the net2phone brand name. The Traditional Communications segment, which include Mobile Top-Up, that



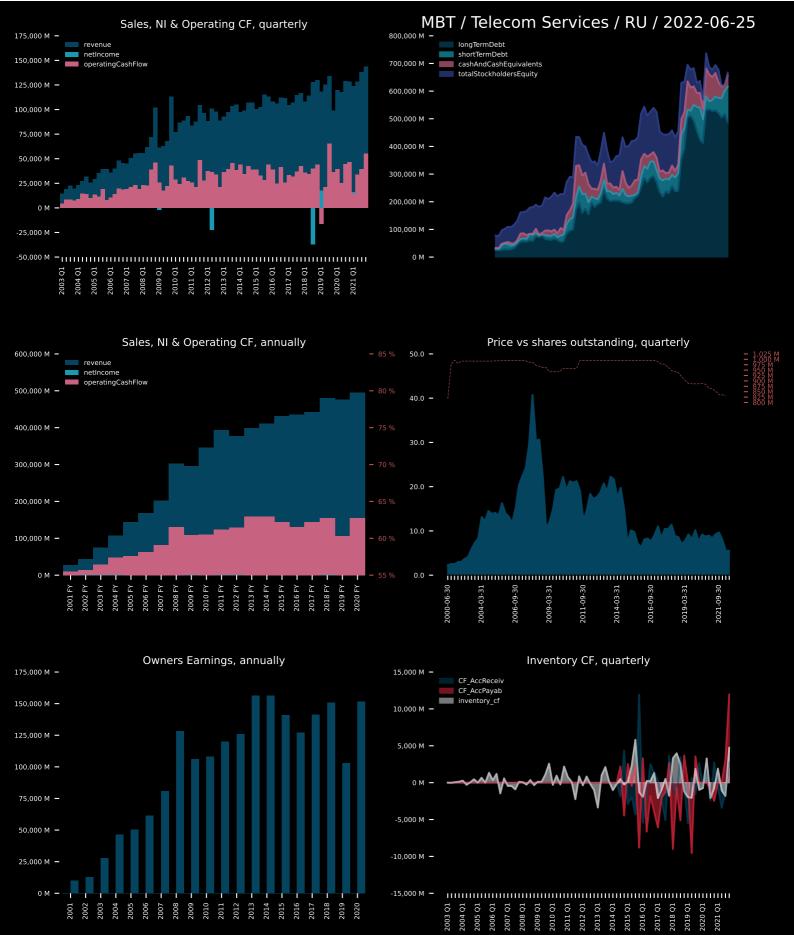
PLDT Inc. provides telecommunications and digital services in the Philippines. It operates through three segments: Wireless, Fixed Line, and Others. The company offers cellular mobile, Internet broadband distribution, operations support, software development, and satellite information and messaging services; and sells Wi-Fi access equipment. It also provides fixed line telecommunications services; business infrastructure and solutions; intelligent data processing and implementation, and data analytics insight generation services; and information and communications infrastructure for Internet-based services, e-commerce, customer relationship management, and information technology (IT) related services. In addition, the company offers managed IT outsourcing, Internet-based purchasing, IT consulting and professional, hills printing and other related value added, and air transportation services:



Telecom Argentina S.A., together with its subsidiaries, provides telecommunications services in Argentina and internationally. The company offers telephone services, including local, domestic, and international long-distance telephone services, as well as public telephone services; interconnection services, such as traffic and interconnection resource, dedicated Internet access, video signals transportation in standard and high definitions, audio and video streaming, dedicated links, backhaul links for mobile operators, Internet protocol virtual private network, video links, value-added, data center hosting/housing, and other services; and call waiting, call forwarding, conference calls, caller ID, voice mail, itemized billing, and maintenance services. It also provides mobile telecommunications services, including voice



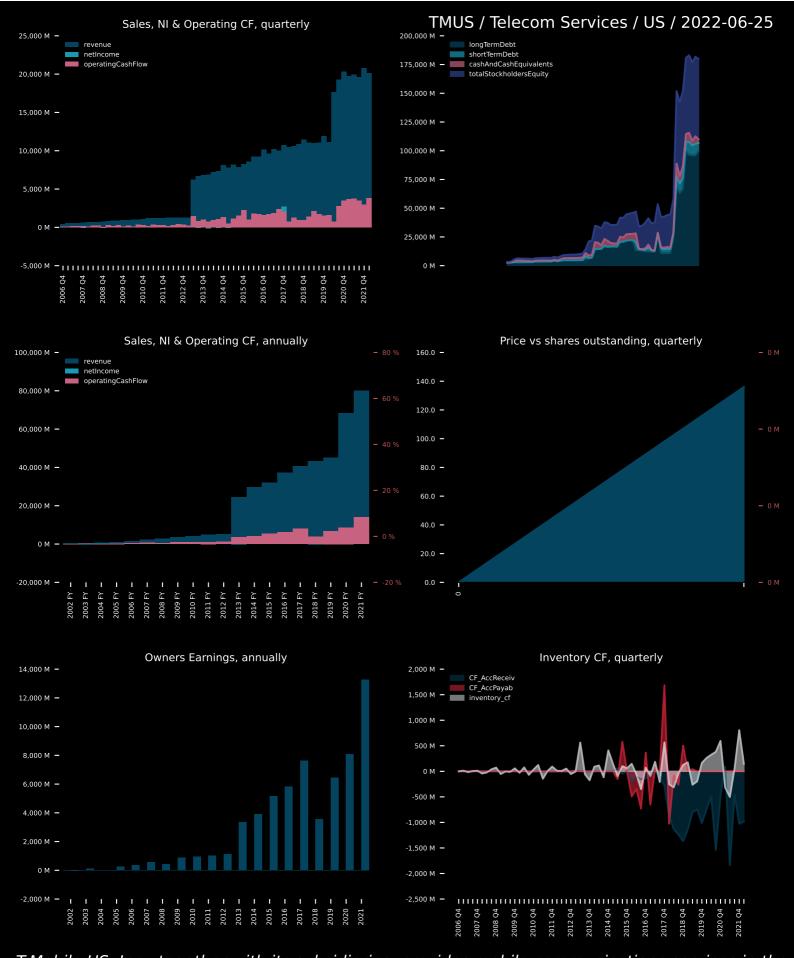
Telephone and Data Systems, Inc., a telecommunications company, provides communications services in the United States. It operates through two segments: UScellular and TDS Telecom. The company offers wireless solutions to consumers and business and government customers, including a suite of connected Internet of things (IoT) solutions, and software applications for monitor and control, business automation/operations, communication, fleet and asset management, smart water solutions, private cellular networks and custom, and end-to-end IoT solutions; wireless priority services and quality priority and preemption options; smartphones and other handsets, tablets, wearables, mobile hotspots, routers, and IoT devices; and accessories, such as cases, screen protectors, chargers, and memory cards, as well as



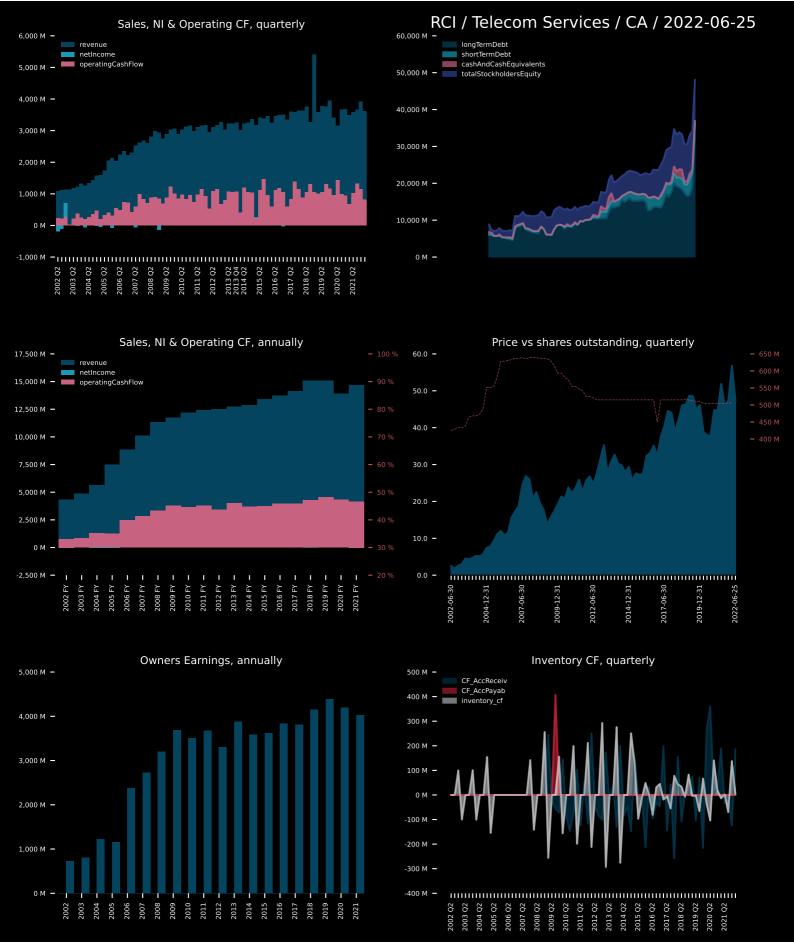
Mobile TeleSystems Public Joint Stock Company provides telecommunication services primarily in Russia. It offers voice and data transmission, internet access, broadband, pay TV, and various value added services through wireless and fixed lines; financial services; and integration services, as well as sells equipment, accessories, and software. The company also provides cloud computing services, data analysis tools, cybersecurity systems, and intelligent IoT solutions for B2B clients; provides My MTS self care app, mobile music, mobile TV, and video-on demand; and owns eSport clubs and MTS online shop. In addition, it offers banking and e-commerce services. The company was founded in 1993 and is headquartered in Moscow, Russia. Mobile TeleSystems Public Joint Stock Company is a subsidiary of Sistema Public Joint Stock Einancial Corporation.



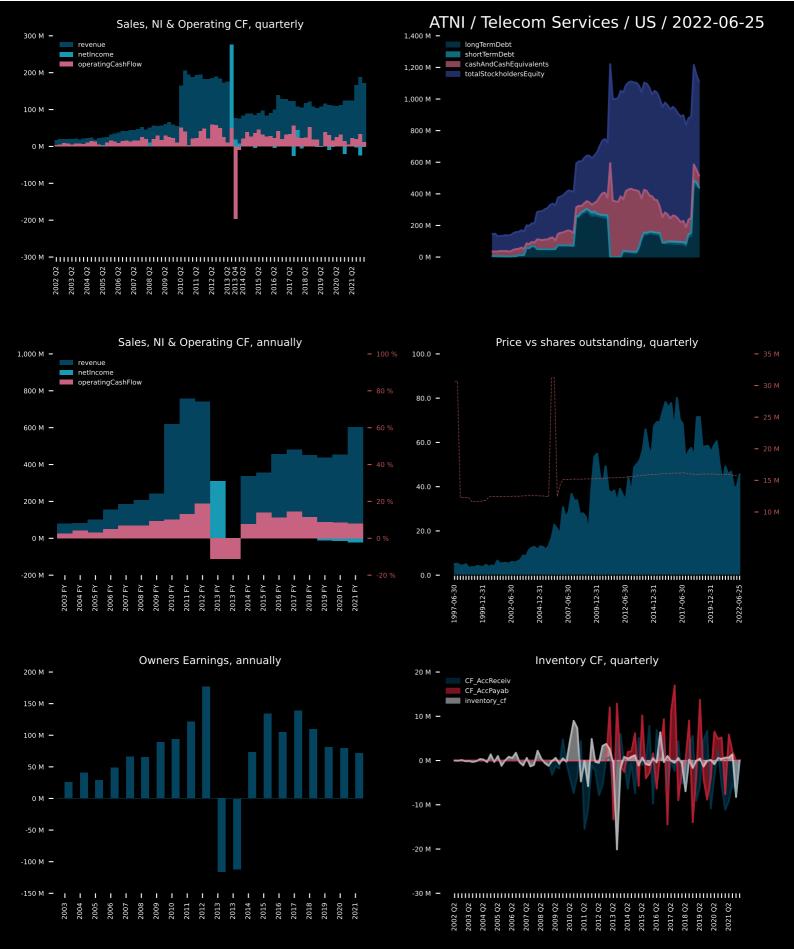
Elisa Oyj provides data communications and digital services. It operates in two segments, Consumer Customers and Corporate Customers segments. The company offers telecommunications and communications services, such as fixed and mobile subscription, digital, cable-tv subscription, entertainment, and e-reading services, as well as video conferencing services. It also provides industrial IoT solutions for manufacturers, remote patient monitoring and healthcare solutions, and B2B customer support services; and online services. The company serves approximately 2.8 million consumers, companies, and public administration organizations in Finland, rest of Europe, and internationally. Elisa Oyj was founded in 1882 and is headquartered in Helsinki, Finland.



T-Mobile US, Inc., together with its subsidiaries, provides mobile communications services in the United States, Puerto Rico, and the United States Virgin Islands. The company offers voice, messaging, and data services to 108.7 million customers in the postpaid, prepaid, and wholesale markets. It also provides wireless devices, including smartphones, wearables, and tablets and other mobile communication devices, as well as wireless devices and accessories. In addition, the company offers services, devices, and accessories under the T-Mobile and Metro by T-Mobile brands through its owned and operated retail stores, T-Mobile app and customer care channels, and its websites. It also sells its devices to dealers and other third-party distributors for resale through independent third-party retail outlets and various third-party websites. As of



Rogers Communications Inc. operates as a communications and media company in Canada. It operates through three segments: Wireless, Cable, and Media. The company offers mobile Internet access, wireless voice and enhanced voice, device and accessory financing, wireless home phone, device protection, e-mail, global voice and data roaming, bridging landline, machine-to-machine and Internet of Things solutions, and advanced wireless solutions for businesses, as well as device delivery services; and postpaid and prepaid services under the Rogers, Fido, and chatr brands to approximately 11.3 million subscribers. It also provides Internet and WiFi services; smart home monitoring services, such as monitoring, security, automation, energy efficiency, and smart control through a smartphone app. In addition, the



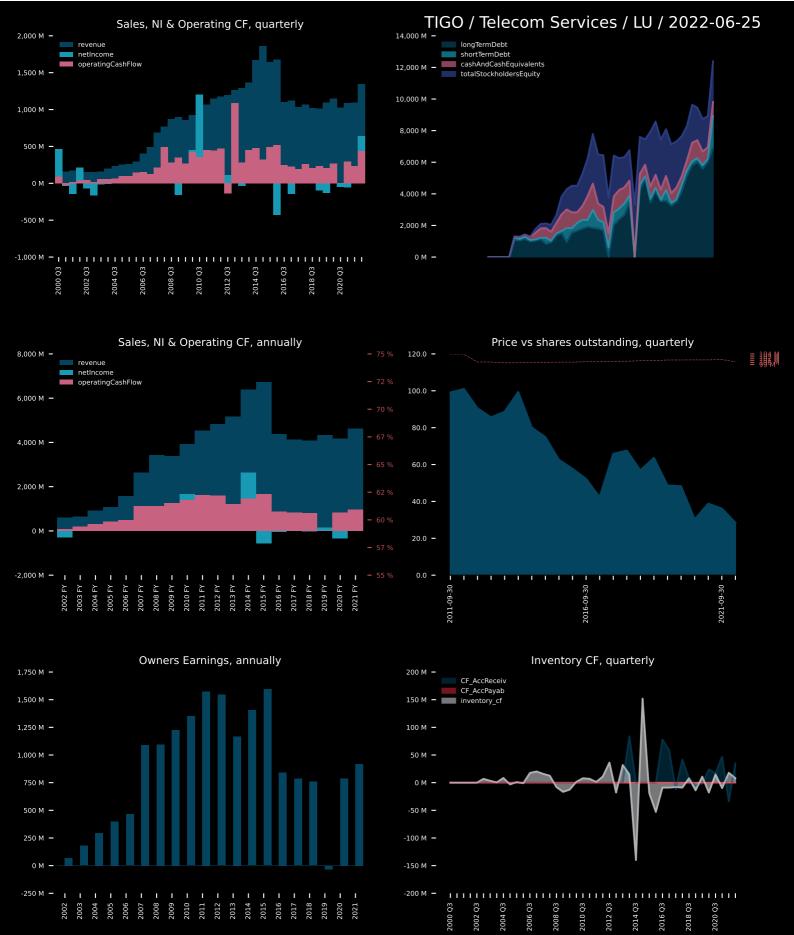
ATN International, Inc., through its subsidiaries, provides telecommunications services. It operates in three segments: International Telecom, US Telecom, and Renewable Energy. The International Telecom segment provides fixed data and voice; fixed, carrier, managed, and mobility services to customers in Bermuda, the Cayman Islands, Guyana, and the US Virgin Islands, as well as video services in Bermuda, the Cayman Islands, and the US Virgin Islands. This segment also offers mobile, data, and voice services to retail and business customers in Bermuda, Guyana, and US Virgin Islands under the One, GTT+, and Viya brands; roaming services; and handsets and accessories. The US Telecom segment provides carrier services, such as wholesale roaming services; fixed, mobility, carrier, and managed services to business and consumer; private network services to enterprise and consumer customers; and site.



Telia Company AB (publ) provides communication services in Sweden, Finland, Norway, Denmark, Lithuania, Estonia, and Latvia. The company offers mobile, broadband, television, and fixed-line services to businesses, individuals, families, and communities. It provides networking, cloud and security, mobility, enterprise mobile network, contact center, managed mobility services, collaboration solutions, enterprise telephony, Internet of Things (IoT), carrier ethernet, dedicated internet access, wavelengths, IP Transit, dark fiber, colocation, and IoT connectivity solutions, as well as broadcasting and content production services, and customer financing services. The company markets its products and services under the Telia, halebop, Fello, TV4, C More, MTV, MyCall, OneCall, Phonero, Call me, Mit tele, Diil, Lmt Okarte, Telia Latvija, Cloudy, Tot, and Erys brands for logistics, public transport, manufacturing, rotail, utilities, building, and



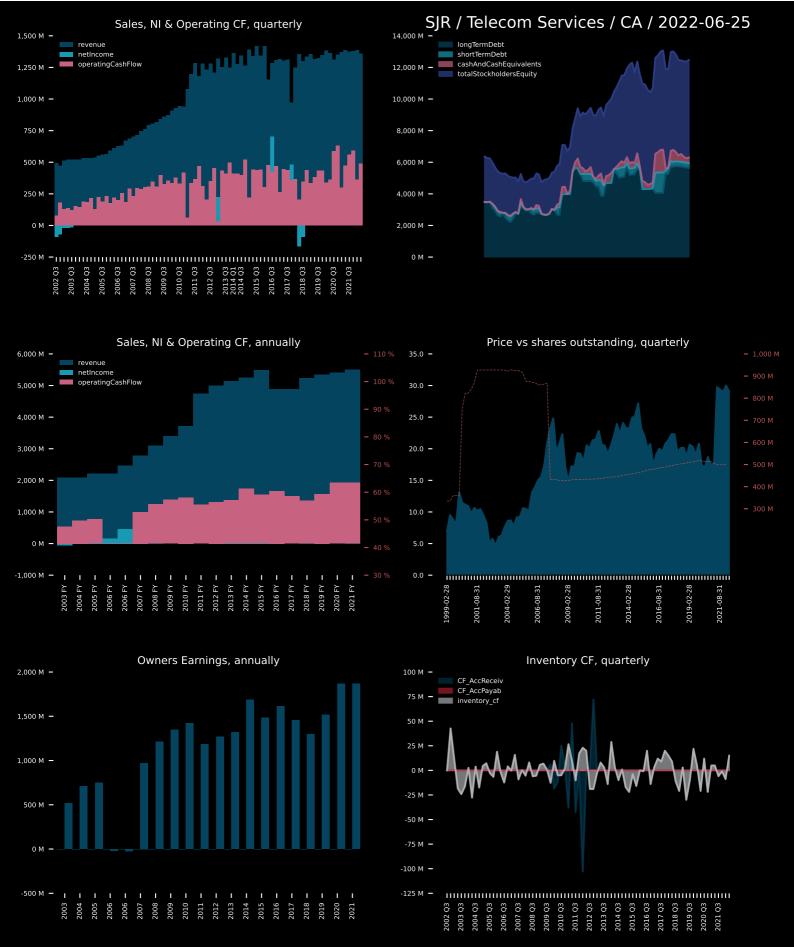
Liberty Broadband Corporation engages in the communications businesses. It operates through GCI Holdings and Charter segments. The GCI Holdings segment provides a range of wireless, data, video, voice, and managed services to residential customers, businesses, governmental entities, and educational and medical institutions primarily in Alaska under the GCI brand. The Charter segment offers subscription-based video services comprising video on demand, high-definition television, and digital video recorder service; local and long-distance calling, voicemail, call waiting, caller ID, call forwarding, and other voice services, as well as international calling services; and Spectrum TV. It also provides internet services, including an in-home Wi-Fi product that provides customers with high-performance wireless routers and



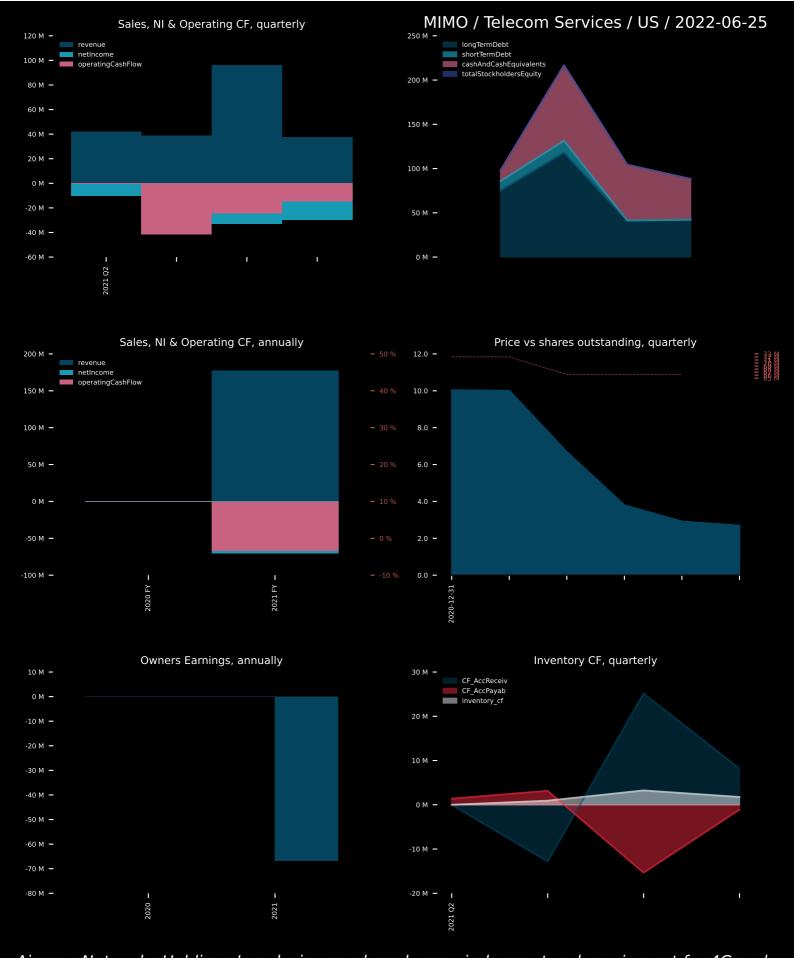
Millicom International Cellular S.A. provides cable and mobile services in Latin America and Africa. The company offers mobile services, including mobile data and voice; short message service; and mobile financial services, such as payments, money transfers, international remittances, savings, real-time loans, and micro-insurance. It also provides cable and other fixed services, including broadband, content, fixed voice, and pay-TV to residential consumers; and fixed, managed services, cloud and security solutions, and value-added services to small, medium, and large businesses, as well as governmental entities. As of December 31, 2021, the company served 44.9 million mobile customers; and 12.7 million cable homes. It markets its products and services under Tigo and Tigo Business brands. The company was founded in 1990 and is headquartered in Luxembourg.



Cincinnati Bell Inc., together with its subsidiaries, provides diversified telecommunications and technology services to residential and business customers in the United States. It operates in two segments, Entertainment and Communications, and IT Services and Hardware. The Entertainment and Communications segment offers data services, including high-speed Internet access, data transport, and interconnection services, as well as metro-Ethernet products; and voice local services, as well as long distance, digital trunking, switched access, and other value-added services, such as caller identification, voicemail, call waiting, and call return. This segment also provides video services comprising entertainment channels, including digital music, local, movie, and sports programming with high-definition channels, parental controls,



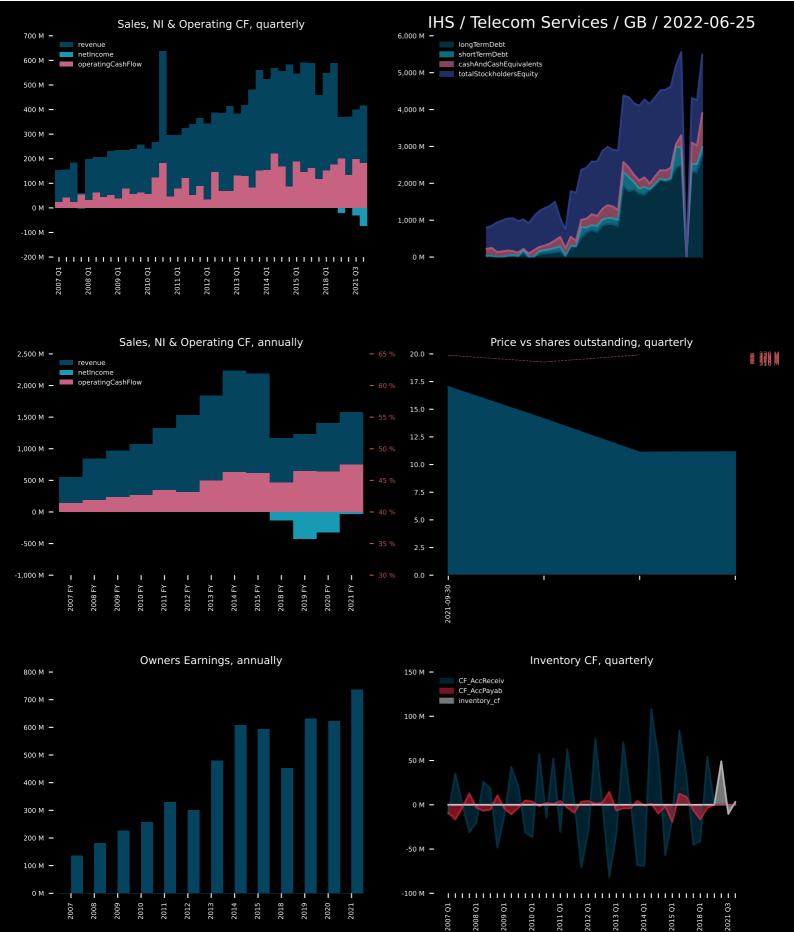
Shaw Communications Inc. operates as a connectivity company in North America. The company operates through Wireline and Wireless segments. The company's Wireline segment provides cable telecommunications services, including video, Internet, WiFi, phone, satellite video, and data networking through a national fibre-optic backbone network to Canadian consumers, North American businesses, and public-sector entities. Its Wireless segment provides wireless services for voice and data communications serving customers in Ontario, British Columbia, and Alberta through Freedom Mobile; and in British Columbia and Alberta through Shaw Mobile. The company was formerly known as Shaw Cablesystems Ltd. and changed its name to Shaw Communications Inc. in May 1993. Shaw Communications Inc. was incorporated in 1966 and is



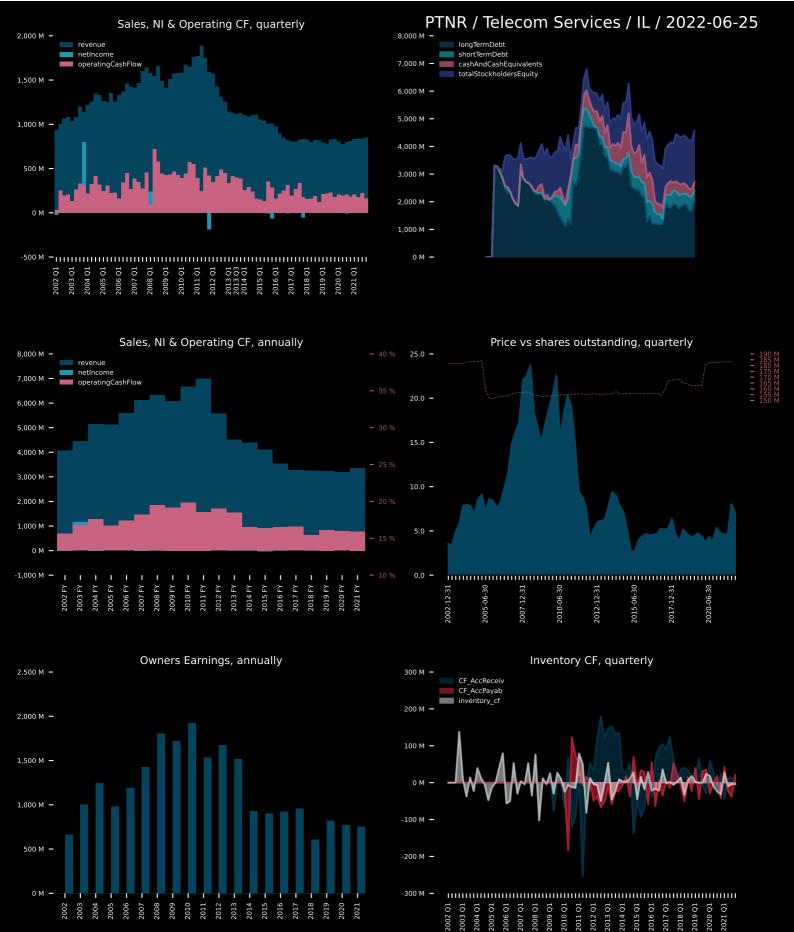
Airspan Networks Holdings Inc. designs and produces wireless network equipment for 4G and 5G networks for mainstream public telecommunications service providers and private network implementations. It offers a range of 4G and 5G network build and network densification products with a portfolio of software and hardware tools for indoor and outdoor, compact femto, pico, micro, and macro base stations, as well as fixed wireless access and backhaul solutions portfolio for point-to-point and point-to-multipoint applications. The company serves mobile communications service providers, large enterprises, military communications integrators, and internet service providers. Airspan Networks Holdings Inc. is headquartered in Boca Raton, Florida.



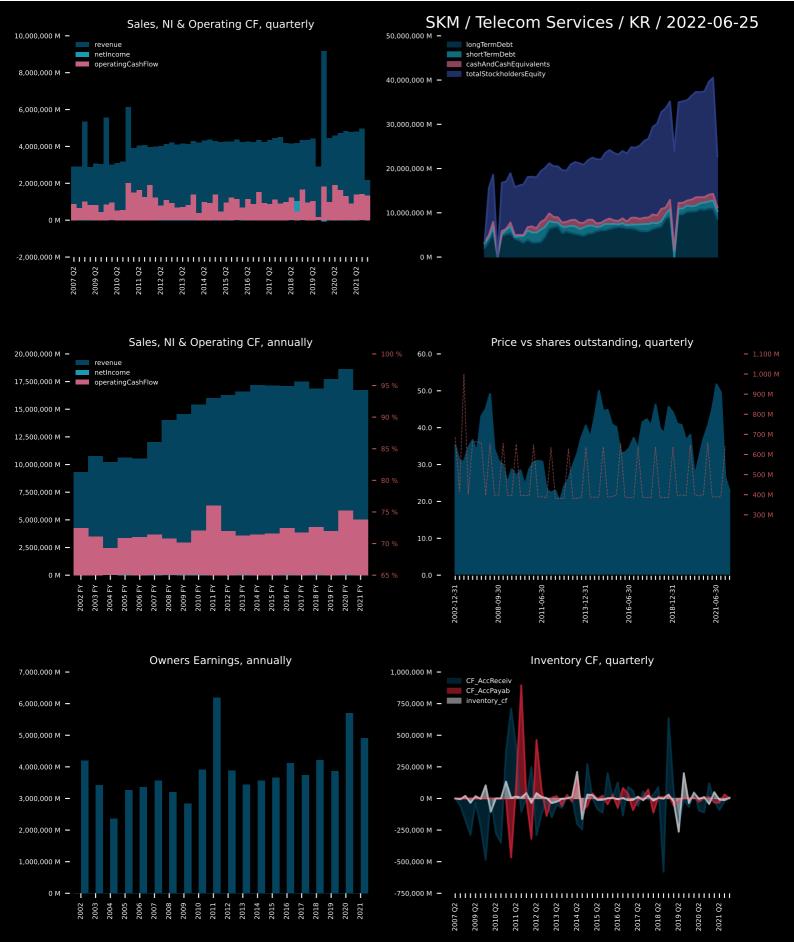
uCloudlink Group Inc. operates as a mobile data traffic sharing marketplace in the telecommunications industry. It provides uCloudlink 1.0, a model that focuses on cross-border travelers that need mobile data connectivity services in various countries; and operates portable Wi-Fi services under the Roamingman name in China and Malaysia, which provides global mobile data connectivity services, as well as offers GlocalMe portable Wi-Fi terminals and cloud SIM architecture for mobile virtual network operators (MVNOs), mobile network operators (MNOs), and portable Wi-Fi terminal rental companies. The company also offers uCloudlink 2.0, a model that provides mobile data connectivity services to local users through various MNOs; GlocalMe Inside, an implementation solutions for smartphones and other smart hardware



IHS Holding Limited, together with its subsidiaries, owns, operates, and develops shared telecommunications infrastructure in Africa, Latin America, Europe, and the Middle East. It offers colocation and lease agreement, build-to-suit, fiber connectivity, and rural telephony solutions. The company serves mobile network operators, internet service providers, broadcasters, security functions, and private corporations. IHS Holding Limited was founded in 2001 and is based in London, the United Kingdom.



Partner Communications Company Ltd. provides various telecommunication services in Israel. It operates in two segments, Cellular and Fixed-Line. The company offers cellular telephony services, including basic cellular telephony, text messaging, internet browsing and data transfer, content, handset repair, roaming, and services provided to other operators that are permitted to use its cellular network, as well as Machine to Machine and Internet of Things services. It also provides cellular content and value-added services, such as multimedia messaging, cyber protection, cloud backup, ringtone, music streaming, and various business services; and international roaming services, as well as sells and leases cellular handsets, and related cellular devices and accessories. In addition, the company offers Internet service provider (ISP) services



SK Telecom Co., Ltd. provides wireless telecommunication services in South Korea. The company operates through three segments: Cellular Services, Fixed-Line Telecommunications Services, and Other Businesses. The Cellular Services segment offers wireless voice and data transmission, Internet of Things solutions, platform, cloud, smart factory solutions, subscription, and metaverse platform-based services, as well as sells wireless devices. The Fixed-Line Telecommunications Services segment provides fixed-line telephone services; broadband Internet services; media platform services, such as Internet protocol TV and cable TV; and business communications services. The Other Businesses segment offers television shopping services under the T-commerce brand, as well as portal services. In addition, it provides call conter management, base station maintenance, information gathering and consulting, system



VEON Ltd., through its subsidiaries, provides mobile and fixed-line telecommunications services. It offers voice, data, and other telecommunication services through a range of wireless, fixed, and broadband internet services. The company provides value added services, including short messages, multimedia messages, caller number identification, call waiting, data transmission, mobile internet, downloadable content, mobile finance services, machine-to-machine, and other services; national and international roaming services; wireless internet access and mobile financial services; and mobile bundles and call completion services. It also offers fixed-line telecommunication services, such as voice, data, internet, and value added services for corporations, operators, and consumers, as well as sells equipment and accessories. The



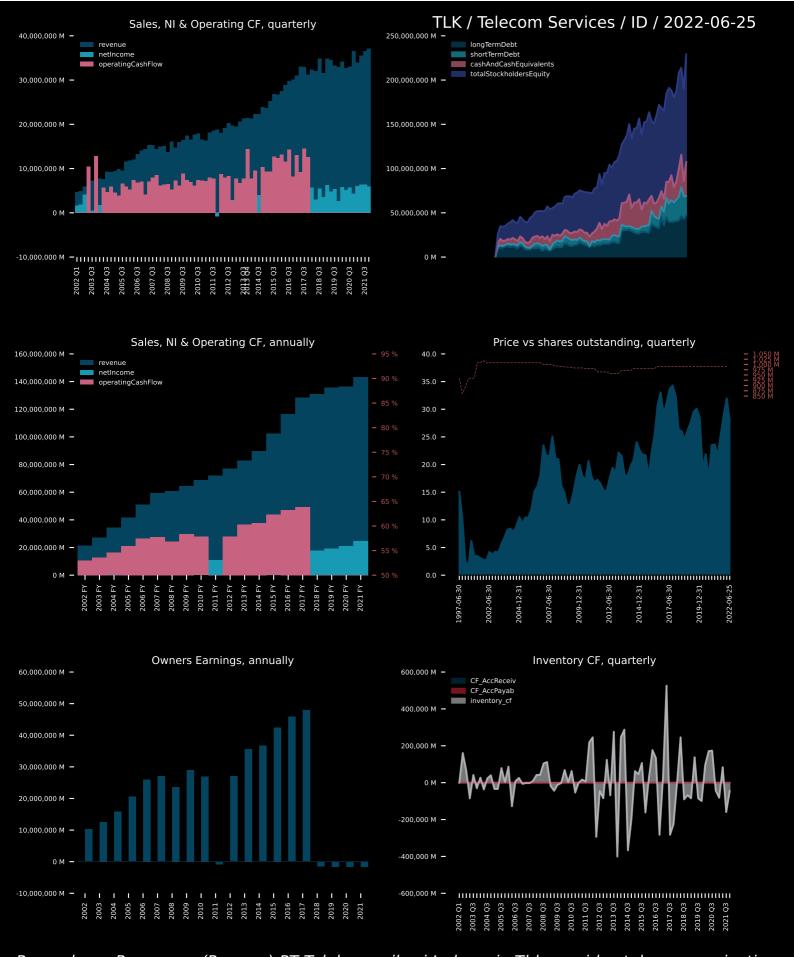
Tower One Wireless Corp. owns, develops, and operates build-to-suit multitenant communications structures in Argentina, Colombia, Mexico, the United States, and internationally. It engages in the leasing of space on communications sites to mobile network operators. The company also provides tower-related services, including site acquisition, zoning and permitting, structural analysis, and construction. Tower One Wireless Corp. was founded in 2015 and is based in Vancouver, Canada.



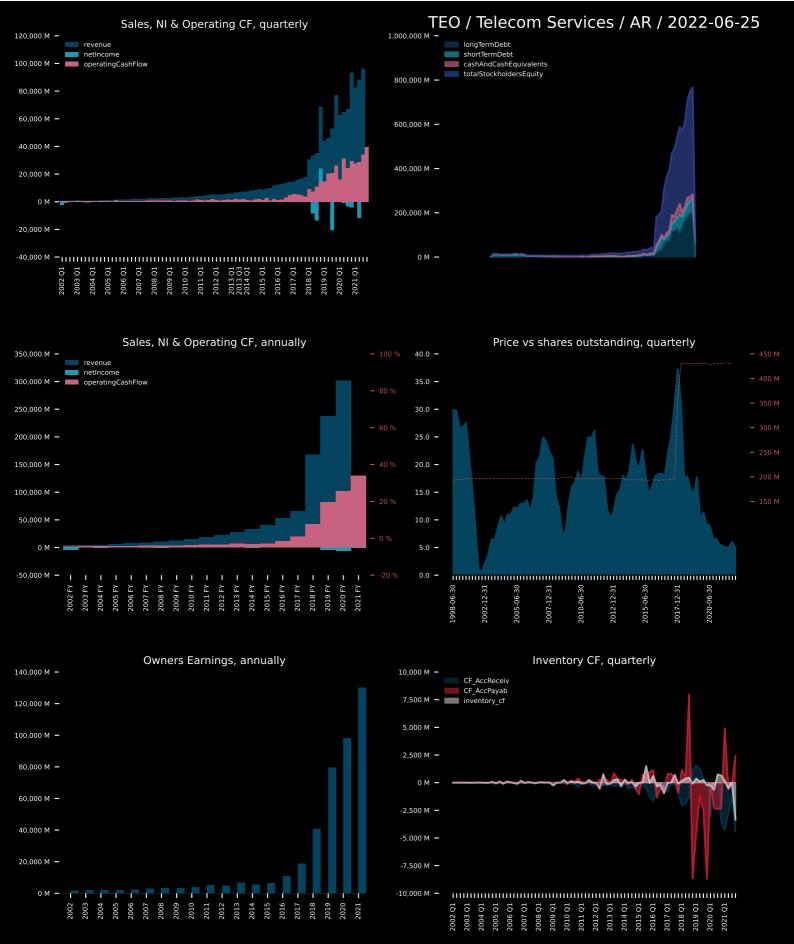
GTT Communications, Inc. provides cloud networking services to multinational enterprises, carriers, and government customers in the United States, Europe, and internationally. The company offers wide area networking, such as software-defined wide area networking, multiprotocol label switching, and virtual private LAN service; high bandwidth-Internet connectivity and IP transit, as well as broadband and wireless Internet access services; managed equipment and security services; and unified communication services consisting of session initiation protocol trunking, cloud unified communication service, and traditional analog voice. It also provides transport services, such as Ethernet services that enable to design network equipment; and video transport services to support broadcast quality transmission of live events, sports entertainment, and nows to modia and entertainment industry. In addition



iQSTEL Inc., through its subsidiary, Etelix.com USA, LLC, provides telecom and technology solutions. It provides international long-distance voice services (ILD wholesale) for telecommunications operator; and submarine fiber optic network capacity for internet, such as 4G and 5G. The company offers voice over IP connectivity, short messages service (SMS), and international and domestic SMS termination services. It also provides infrastructure connectivity, Cloud-PBX, OmniChannel marketing, Internet of Things services, and blockchain and payment solutions. iQSTEL Inc. serves wholesale carrier, government, corporate, enterprise, and small and medium companies in North America, Latin America, and Europe. The company was formerly known as PureSnax International, Inc. and changed its name to iQSTEL Inc. in



Perusahaan Perseroan (Persero) PT Telekomunikasi Indonesia Tbk provides telecommunications, informatics, and network services worldwide. The company's Mobile segment offers mobile voice, SMS, and mobile broadband services; and digital services, including financial services, video on demand, music, gaming, IoT, big data analytics, and digital advertising services. Its Consumer segment provides fixed voice and broadband services; and IPTV and related consumer digital services. The company's Enterprise segment offers ICT and digital platform that covers enterprise-grade connectivity services, including satellite, IT services, data center and cloud, and business process outsourcing services, as well as CPE trading and managed, cyber security, financial, big data, digital advertising, e-health, managed ATM, and professional services. Its Wholesale and International Rusiness segment provides wholesale voice, managed



Telecom Argentina S.A., together with its subsidiaries, provides telecommunications services in Argentina and internationally. The company offers telephone services, including local, domestic, and international long-distance telephone services, as well as public telephone services; interconnection services, such as traffic and interconnection resource, dedicated Internet access, video signals transportation in standard and high definitions, audio and video streaming, dedicated links, backhaul links for mobile operators, Internet protocol virtual private network, video links, value-added, data center hosting/housing, and other services; and call waiting, call forwarding, conference calls, caller ID, voice mail, itemized billing, and maintenance services. It also provides mobile telecommunications services, including voice



Intelsat S.A., together with its subsidiaries, provides satellite communications services worldwide. The company offers a range of communications services to media companies, fixed and wireless telecommunications operators, data networking service providers for enterprise and mobile applications in the air and on the seas, multinational corporations, and Internet service providers; and commercial satellite communication services to the U.S. government and other military organizations and their contractors. It provides various on-network services, including transponder services; managed services that combine satellite capacity, teleport facilities, satellite communications hardware, and other ground facilities to provide managed and monitored broadband, trunking, video, and private network services to customers; and changel services primarily used for providing point to point bilatoral services to



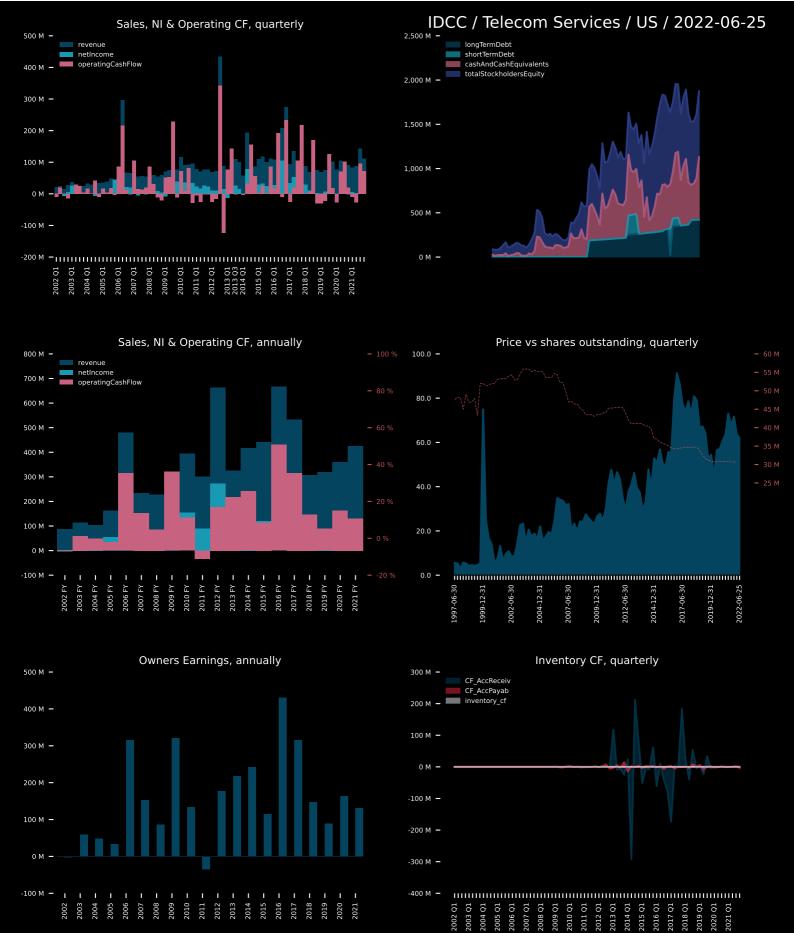
HC2 Holdings, Inc. provides construction, marine services, energy, telecommunications, insurance, life sciences, broadcasting, and other services in the United States, the United Kingdom, and internationally. The company models, details, fabricates, and erects structural steel for commercial and industrial, and infrastructure construction projects, including building and office complexes, hotels and casinos, convention centers, sports arenas and stadiums, shopping malls, hospitals, dams, bridges, mines, and power plants. It also fabricates trusses and girders; and fabricates and erects water pipes, water storage tanks, pollution control scrubbers, tunnel liners, pressure vessels, strainers, filters, separators, and various customized products. In addition, the company offers subsea cable installation and maintenance services for the



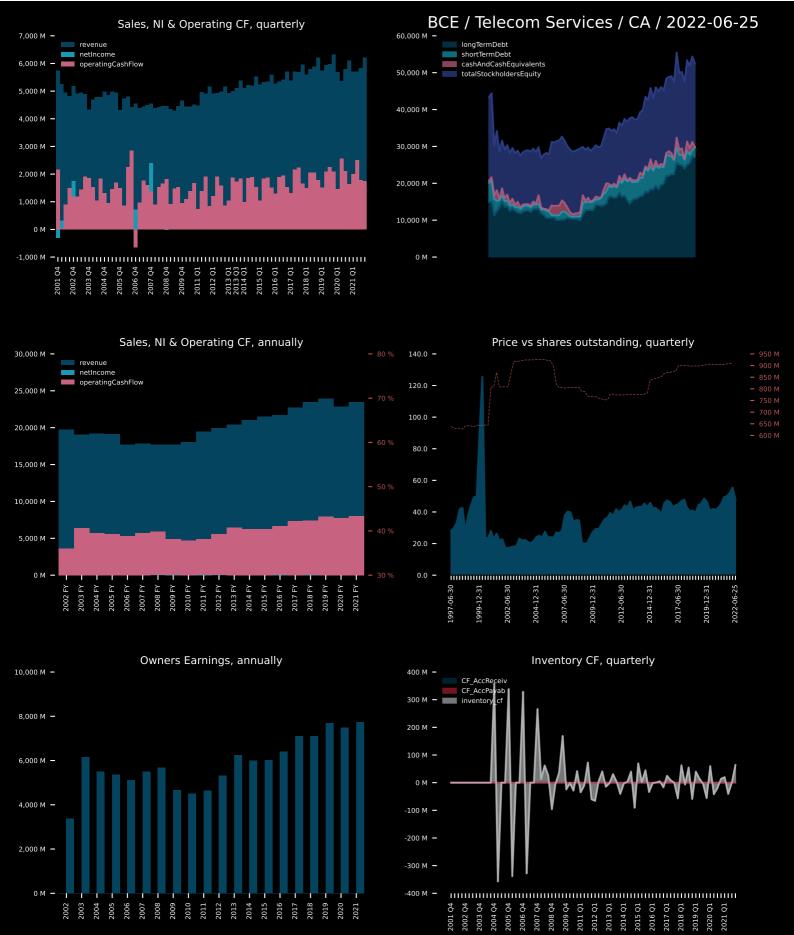
Liberty Latin America Ltd., together with its subsidiaries, provides fixed, mobile, and subsea telecommunications services. The company offers communications and entertainment services, including video, broadband internet, fixed-line telephony, and mobile services to residential and business customers; and business products and services that include enterprise-grade connectivity, data center, hosting, and managed solutions, as well as information technology solutions for small and medium enterprises, international companies, and governmental agencies. It also operates a sub-sea and terrestrial fiber optic cable network that connects approximately 40 markets. The company provides its services in approximately 20 countries in Latin America, the Caribbean, Chile, and Costa Rica under the brands of C&W, VTR, Liberty



KT Corporation provides integrated telecommunications and platform services in Korea and internationally. The company offers fixed-line telephone services, including local, domestic long-distance, international long-distance, and voice over Internet protocol telephone services, as well as interconnection services; broadband Internet access service and other Internet-related services; and data communication services, such as fixed-line and leased line services, as well as broadband Internet connection services. It also provides media and content services, including IPTV, satellite TV, digital music, e-commerce, online advertising consulting, and digital comics and novels services; and credit card processing and other financial services. In addition, the company offers information technology and network services, and satellite



InterDigital, Inc., together with its subsidiaries, designs and develops technologies that enable and enhance wireless communications in the United States, China, South Korea, Japan, Taiwan, and Europe. It provides technology solutions for use in digital cellular and wireless products and networks, including 2G, 3G, 4G, 5G, and IEEE 802-related products and networks. The company develops cellular technologies, such as technologies related to CDMA, TDMA, OFDM/OFDMA, and MIMO for use in 2G, 3G, 4G, and 5G wireless networks, as well as mobile terminal devices; and 3GPP technology portfolio in 5G NR, beyond 5G (B5G), extended reality over wireless, and cellular Internet of Things (IoT) areas, as well as technologies for automobiles, wearables, smart homes, drones, and other connected consumer electronic products. It also provides video



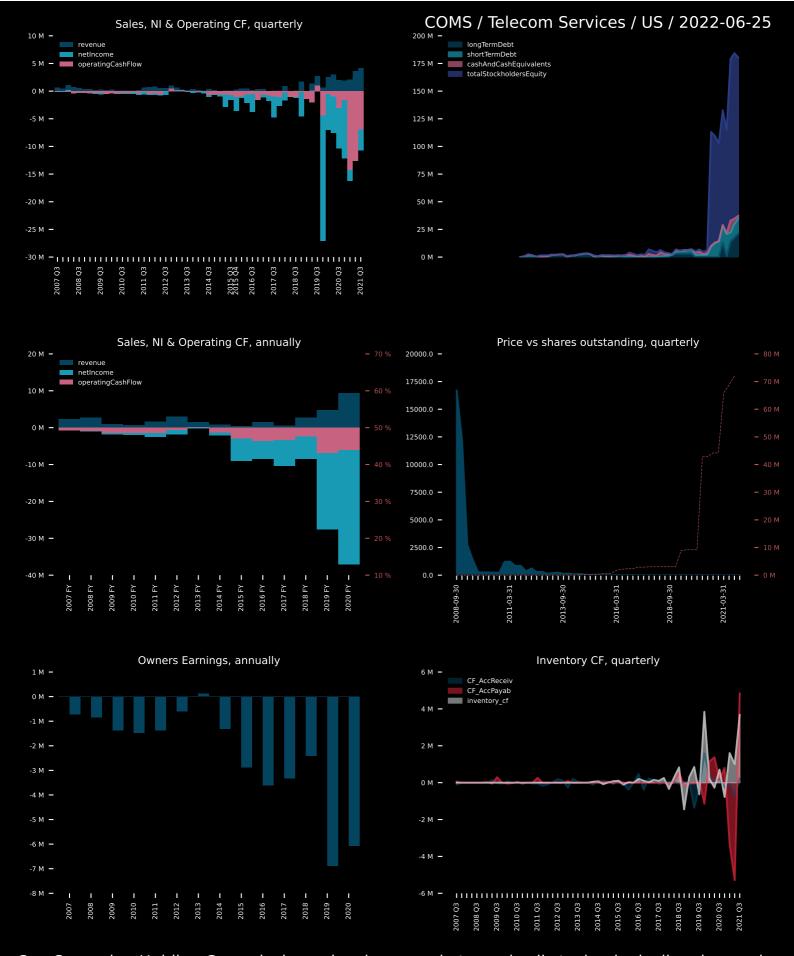
BCE Inc. operates as a telecommunications and media company in Canada. The company offers wireless, wireline, Internet, and television (TV) services to residential, business, and wholesale customers. It operates through three segments: Bell Wireless, Bell Wireline, and Bell Media. The Bell Wireless segment provides wireless voice and data communication products and services, and consumer electronics products. The Bell Wireline segment offers data, including internet access and Internet protocol television (IPTV), local telephone, long distance, as well as other communication services and products. This segment also buys and sells local telephone, long distance, data, and other services from or to resellers and other carriers. The Bell Media segment provides conventional TV, specialty TV, pay TV, streaming services, digital media services, radio broadcasting services, and out of home (OOH) advertising services. It owns and



Chunghwa Telecom Co., Ltd., together with its subsidiaries, provides telecommunication services in Taiwan and internationally. It operates through Domestic Fixed Communications Business, Mobile Communications Business, Internet Business, International Fixed Communications Business, and Others segments. The company offers local and domestic long-distance telephone, broadband access, and related services; information and communication technology and VAS services; and interconnection with its fixed-line network to other mobile and fixed-line operators. It also provides mobile; HiNet Internet, data communication, and cloud; Internet data center; and international long-distance telephone and data services. In addition, the company distributes and sells mobile handsets, data cards, electronic materials, and computing and business machinery equipment and software; designs



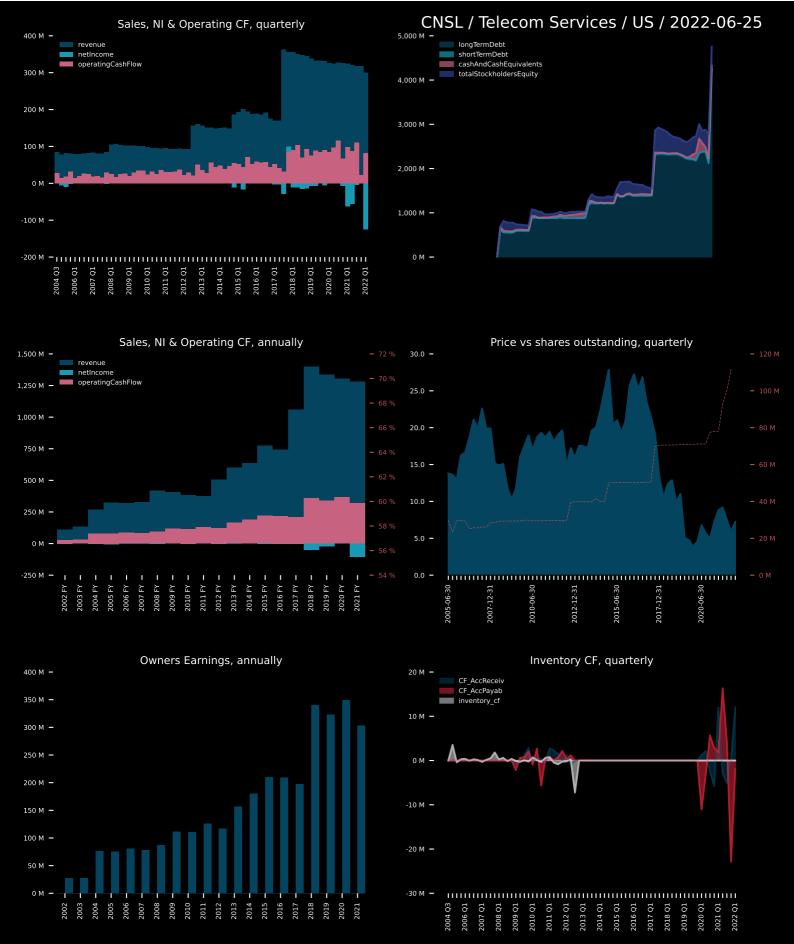
Trilogy International Partners Inc., together with its subsidiaries, provides wireless voice and data communications services in New Zealand, Bolivia, and internationally. It offers prepaid and postpaid payment plans, including local, international long distance, and roaming services to customers and international visitors roaming on its networks. The company also provides fixed broadband communications to residential and enterprise customers, as well as a range of mobile and fixed line services in New Zealand and Australia; and fixed public telephony and wireless broadband services in Bolivia. As of December 31, 2021, it had a distribution network of approximately 13 company owned stores, 170 dealers, and 8,300 other dealer points of presence in Bolivia; and a distribution network of approximately 20 company owned retail stores.



ComSovereign Holding Corp. designs, develops, markets, and sells technologically-advanced telecom solutions for network operators, mobile device carriers, governmental units, and other enterprises worldwide. The company designs, manufactures, and sells microwave packet radio equipment, such as backhaul telecom radios that transmit broadband voice, video, and data, as well as enable service providers, government agencies, enterprises, and other organizations to meet their increasing bandwidth requirements rapidly and affordably; and in-band full-duplex and transpositional modulation technologies that alleviate the performance limitations of the principal transmission technologies. It also offers intelligent batteries and back-up power solutions for use in cellular towers and other radio access network infrastructures, as well as automotive, access and marine vehicles; and tethoroid dropes and accessate for use in



Towerstream Corporation, together with its subsidiaries, provides fixed wireless broadband services over a wireless network transmitting over regulated and unregulated radio spectrum to commercial customers in the United States. Its wireless broadband service supports bandwidth on demand, wireless redundancy, virtual private networks, disaster recovery, bundled data, and video services. The company also offers business class Internet services, such as single tenant service that delivers fixed wireless broadband to a single client through a radio receiver/transmitter on the client's building dedicated solely to that client; and on-net services to connect building at once and at a cost similar for one high bandwidth customer requiring point-to-point equipment. In addition, it provides temporary Internet solutions to provide



Consolidated Communications Holdings, Inc., together with its subsidiaries, provides broadband and business communication solutions for consumer, commercial, and carrier channels in the United States. It offers high-speed broadband Internet access and voice over Internet protocol (VoIP) phone services; commercial data connectivity services in various markets, including Ethernet services, private line data services, software defined wide area network, and multi-protocol label switching services; networking services; cloud-based services; data center and disaster recovery solutions; and wholesale services to regional and national interexchange, and wireless carriers comprising cellular backhaul and other fiber transport solutions. The company also provides voice services, such as local phone and long-distance services; and sells business equipment, as well as offers related bardware and maintenance support, video, and



Frontier Communications Parent, Inc., together with its subsidiaries, provides communications services for consumer and business customers in 25 states in the United States. It offers data and Internet, voice, video, and other services. The company was formerly known as Frontier Communications Corporation and changed its name to Frontier Communications Parent, Inc. in April 2021. Frontier Communications Parent, Inc. was incorporated in 1935 and is based in Norwalk, Connecticut.

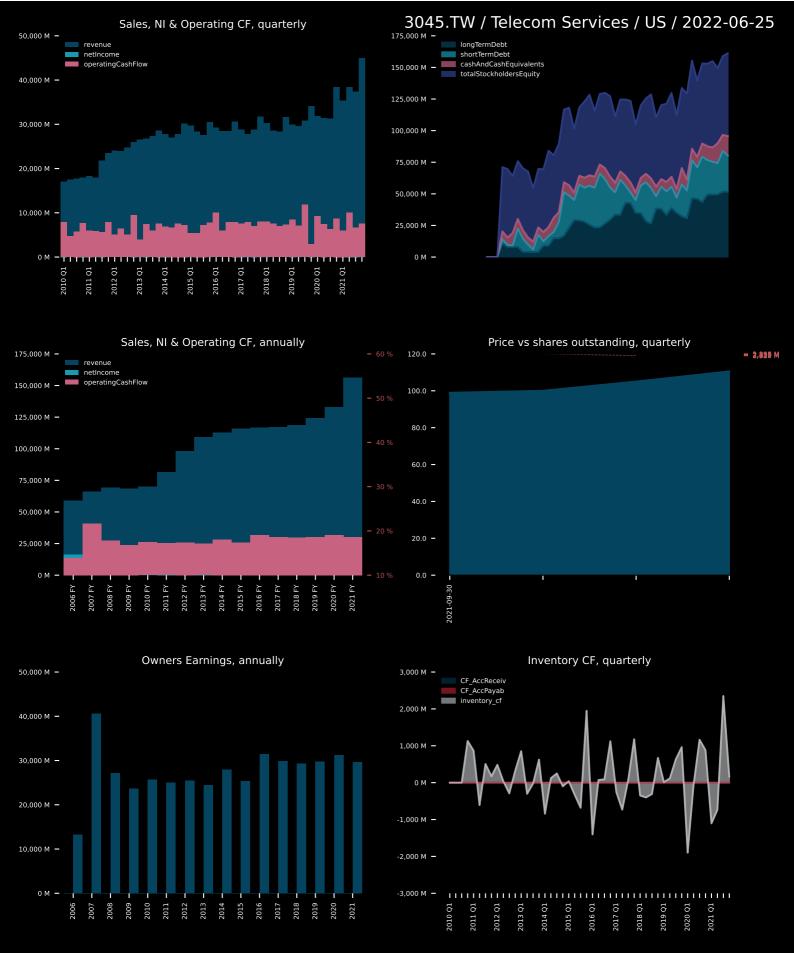


Alaska Communications Systems Group, Inc., through its subsidiaries, provides broadband telecommunication and managed information technology services to business, wholesale, and consumer customers in the United States. Its services include voice and broadband services; and managed IT services comprising remote network monitoring and support service, managed IT security and IT professional services, and long distance services primarily over its own terrestrial network to business and wholesale customers. The company's business customers comprise enterprises; federal, state, and local governments; and small and medium business. It also provides voice and broadband services to residential customers in residential homes and multi-dwelling units; voice and broadband origination and termination services to inter and intrastate carriers; and access and support services. The company markets and solls its

2002 Q2

Q2

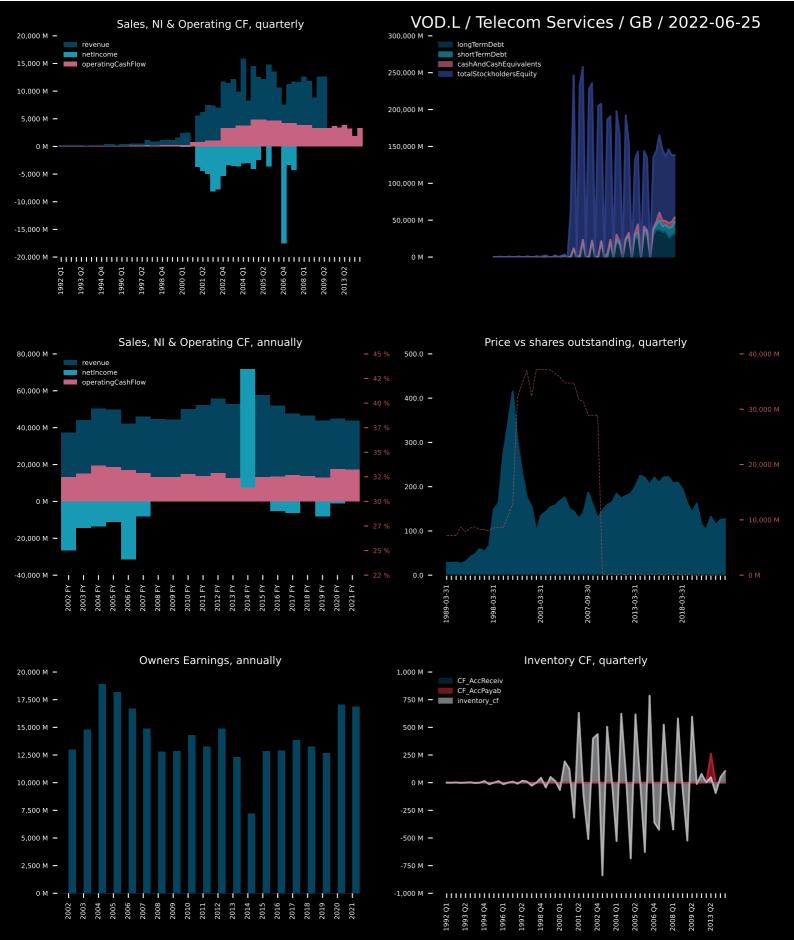
2003 Q2
2004 Q2
2005 Q2
2006 Q2
2007 Q2
2008 Q2
2008 Q2
2010 Q2
2011 Q2
2014 Q2
2015 Q2
2015 Q2
2015 Q2
2017 Q2
2016 Q2
2017 Q2



Taiwan Mobile Co., Ltd. provides wireless communication services in Taiwan and internationally. The company operates through four segments: Telecommunications, Retail, Cable Television, and Others. It offers mobile communication, data mobile, and fixed-line services; and TV shopping, online shopping, and catalog shopping services. The company also provides pay TV and cable broadband services; travel, property insurance, and life insurance agency services; online music services; and value-added services, including video and music streaming, instant messenger, and IoT-related and smart home services. In addition, it is involved in the building and operating of BOT project; call center service and telephone activities; and investment, retail, and mobile application development and design businesses, as well as sale of mobile



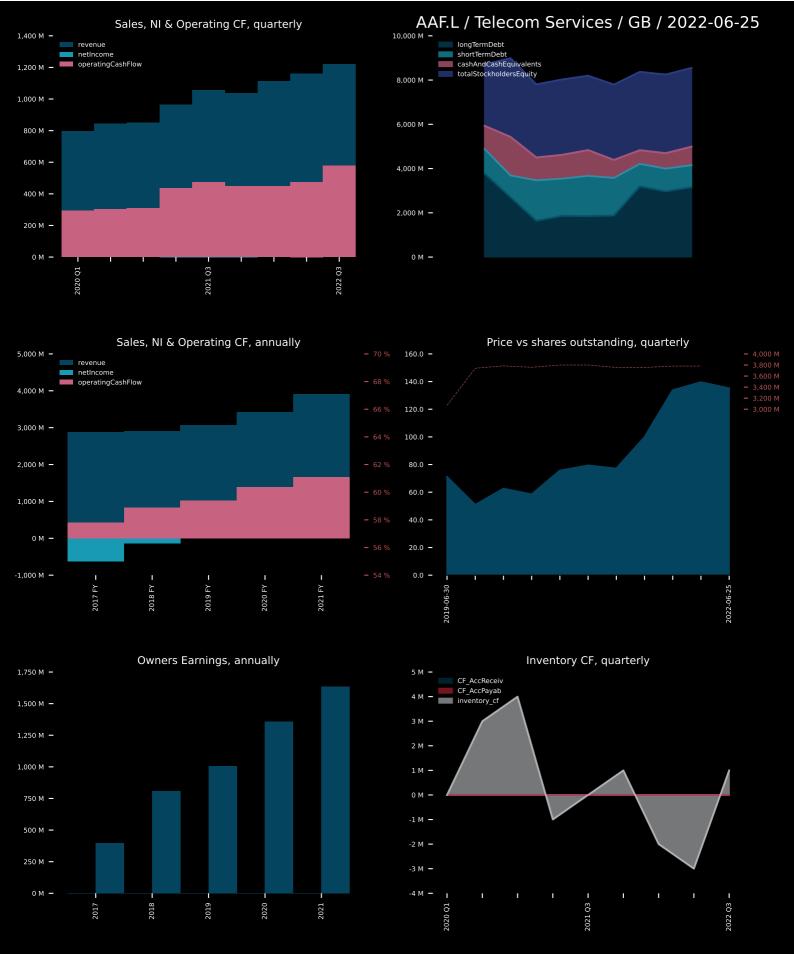
Chunghwa Telecom Co., Ltd., together with its subsidiaries, provides telecommunication services in Taiwan and internationally. It operates through Domestic Fixed Communications Business, Mobile Communications Business, Internet Business, International Fixed Communications Business, and Others segments. The company offers local and domestic long-distance telephone, broadband access, and related services; information and communication technology and VAS services; and interconnection with its fixed-line network to other mobile and fixed-line operators. It also provides mobile; HiNet Internet, data communication, and cloud; Internet data center; and international long-distance telephone and data services. In addition, the company distributes and sells mobile handsets, data cards, electronic materials, and computing and business machinery equipment and software; designs



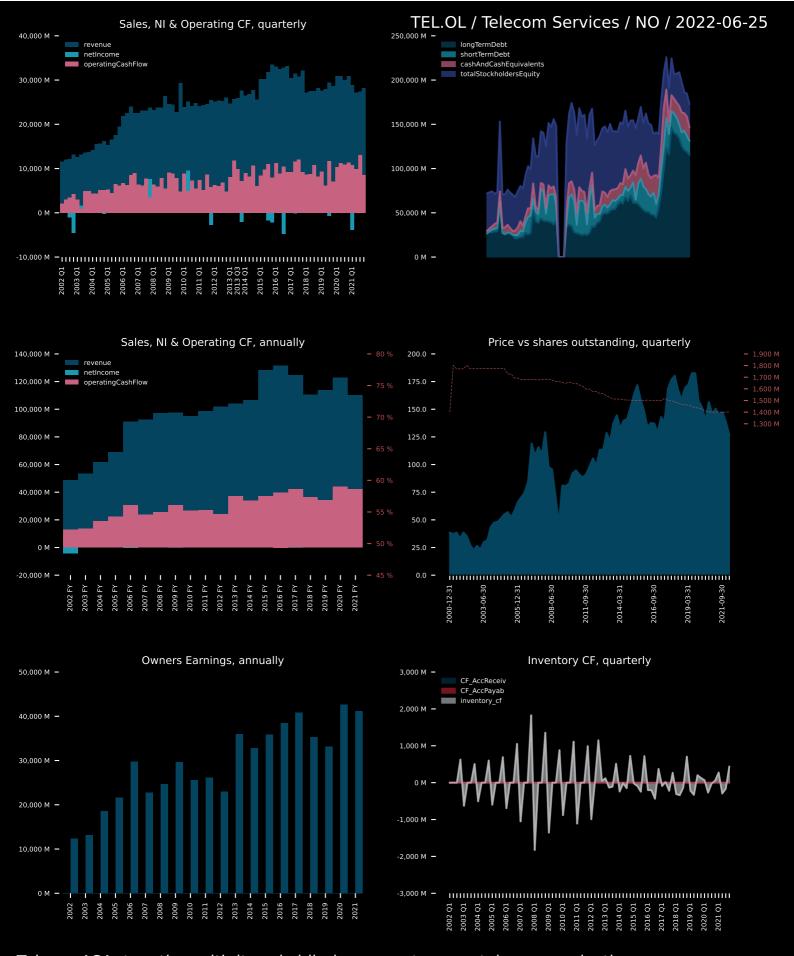
Vodafone Group Public Limited Company engages in telecommunication services in Europe and internationally. The company offers mobile services that enable customers to call, text, and access data; fixed line services, including broadband, television (TV) offerings, and voice; and convergence services under the GigaKombi and Vodafone One names to customers. It also provides value added services, such as Internet of Things (IoT) comprising logistics and fleet management, smart metering, insurance, cloud, and security services; and automotive and health solutions. In addition, the company offers M-Pesa, an African payment platform, which provides money transfer, financial, and business and merchant payment services; and various services to operators through its partner market agreements. Vodafone Group Public Limited



Saudi Telecom Company, together with its subsidiaries, provides telecommunications, information, media, and digital payment services in the Kingdom of Saudi Arabia and internationally. The company offers mobile, landline, internet, and TV on demand services, as well as international telecommunication, broadband, and other related services; and operates communications projects. It is also involved in the electrical business and telecommunication networks; retail and wholesale trade of computer systems and devices, fixed and mobile telecommunication, internet equipment, advertising and publicity material, spare parts, electrical equipment, payment devices, point-of-sale devices, telecom operator services, telecom sales, and service centers; and wholesale and retail of telecommunications equipment and electrical appliances, and recharge card services. In addition, the company operator in



Airtel Africa Plc provides telecommunication and mobile money services to customers in Nigeria, East and Central Africa, and Francophone Africa. It offers prepaid and postpaid wireless voice, international roaming, and fixed line telephone services; data communication services, including 2G, 3G, and 4G; and mobile money services, such as payments, microloans, savings, and international money transfers. The company also messaging, value added, enterprise, and site sharing services, as well as support services; and sells handsets. It serves approximately 165 million customers. The company was incorporated in 2018 and is based in London, the United Kingdom. Airtel Africa Plc is a subsidiary of Airtel Africa Mauritius Limited.



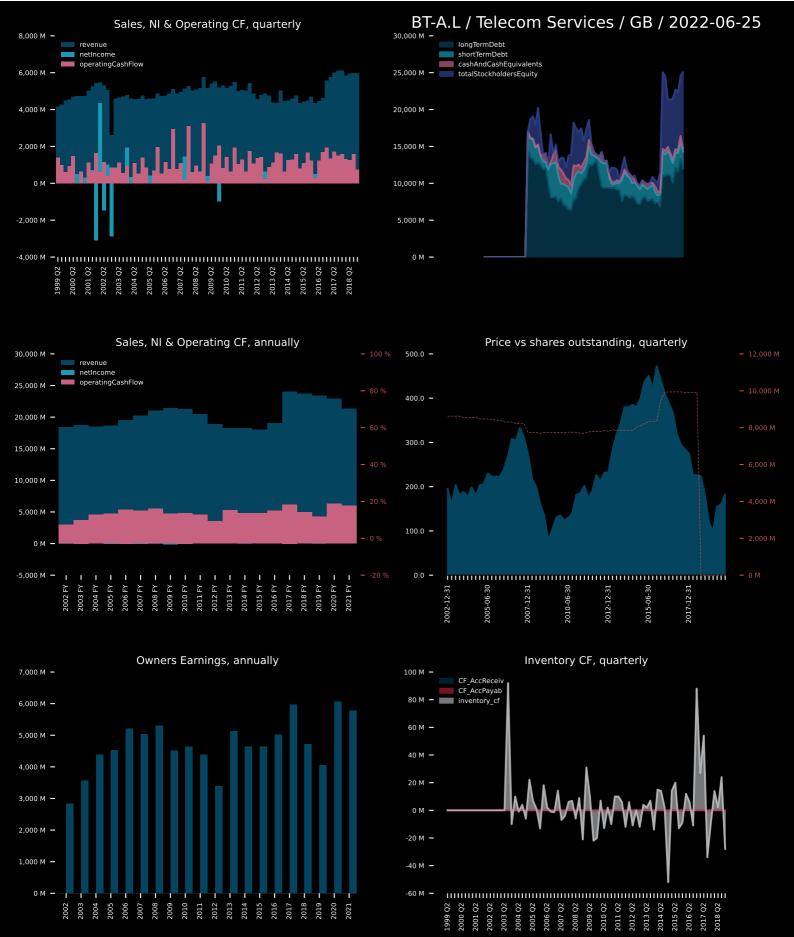
Telenor ASA, together with its subsidiaries, operates as a telecommunication company worldwide. Its principal products and services include mobile communication, fixed line communication, and broadcasting services. The company's mobile communication services comprise voice, data, Internet, and content services, as well as customer equipment and messaging. Its fixed line services consist of telephony, Internet and TV, and leased lines, as well as data and managed services; and broadcasting and data communication services through satellite, terrestrial radio, and TV transmission. The company also provides machine-to-machine communication, as well as internet based services and financial services. Telenor ASA was founded in 1855 and is headquartered in Fornebu, Norway.



Helios Towers plc, an independent tower company, acquires, builds, and operates telecommunications towers and passive infrastructure. It provides site space to mobile network operators and other telecommunications providers that in turn provide wireless voice and data services to consumers and businesses. The company also offers comprehensive tower-related operational services, including site selection, site preparation, maintenance, security, and power management. As of December 31, 2021, it operated a network of 9,560 sites and 18,776 tenancies in Tanzania, the Democratic Republic of Congo, Congo Brazzaville, Ghana, South Africa, Senegal, and Madagascar. The company was founded in 2009 and is based in London, the United Kingdom.



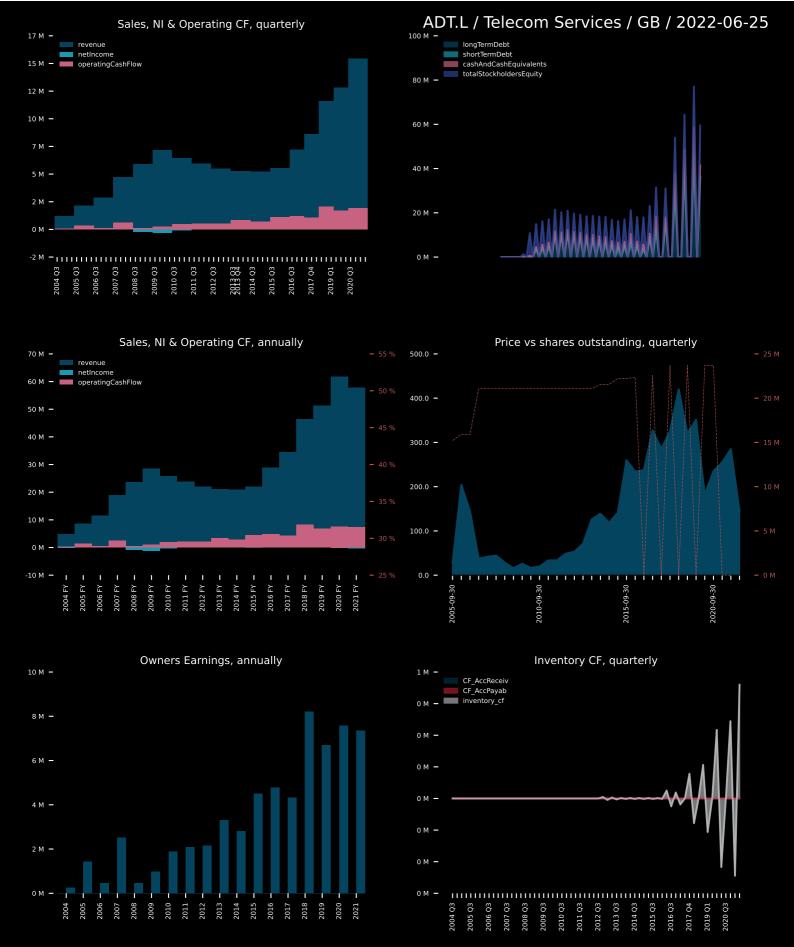
OnMobile Global Limited provides telecom value added services in India and internationally. It offers apps and services under the ONMO brand name; and carrier services, such as ring back tones, videos, contests, and games. The company was formerly known as OnMobile Asia Pacific Private limited and changed its name to OnMobile Global Limited in August 2007. OnMobile Global Limited was incorporated in 2000 and is headquartered in Bengaluru, India.



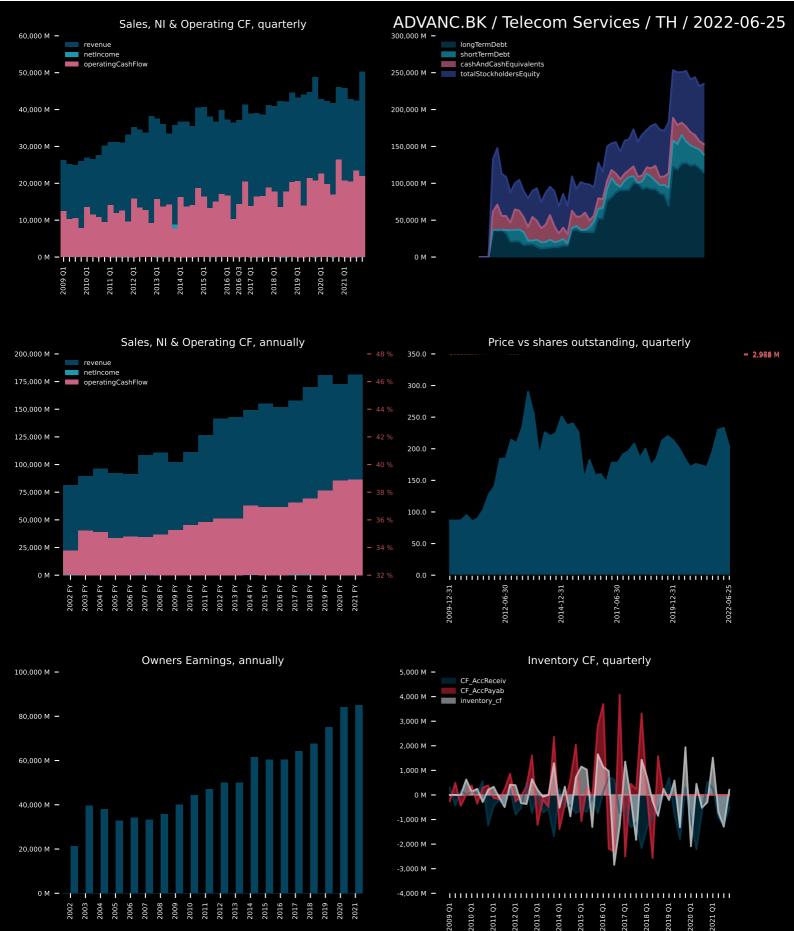
BT Group plc provides communications products and services in the United Kingdom, Europe, the Middle East, Africa, the Americas, and the Asia Pacific. It operates through Consumer, Enterprise, Global, and Openreach segments. The Consumer segment offers landline, mobile, broadband, and TV services under the BT, EE, and Plusnet brands. The Enterprise segment provides network solutions to communications providers; and sells communications and IT services to businesses and public sector organizations. Its services include fixed voice, mobile, fixed connectivity, and IT services. The Global segment secures and manages network and cloud infrastructure and services for multinational corporations. It also offers voice and data network services, such as managed, security and network, and IT infrastructure services. The



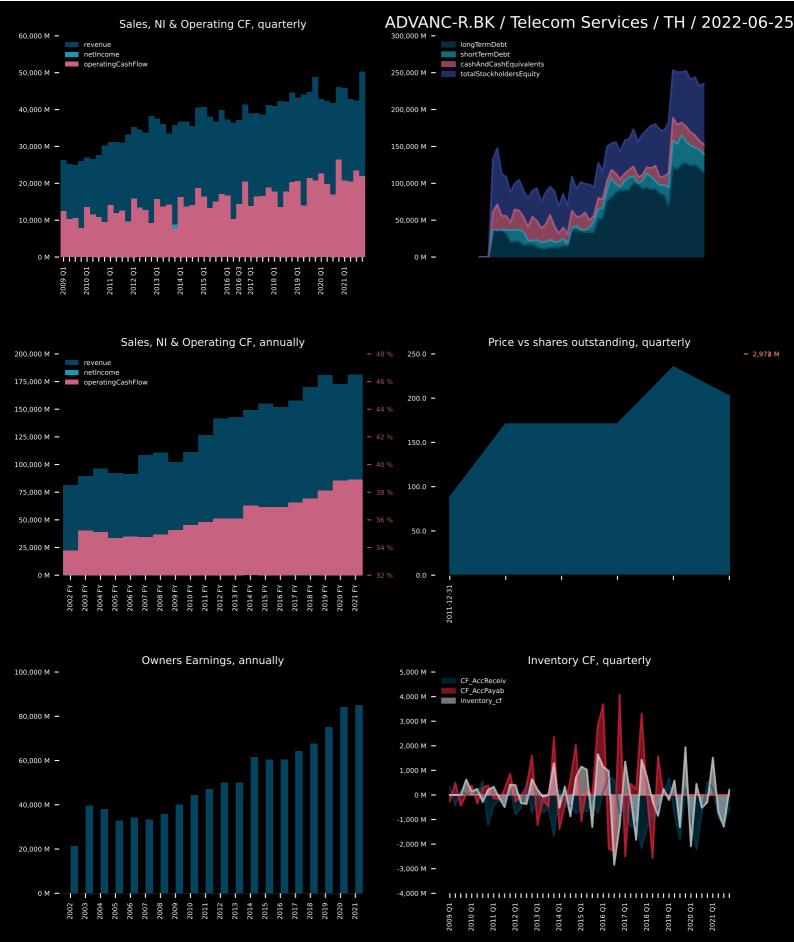
Tata Teleservices (Maharashtra) Limited provides wireline voice, data, and managed telecom services to enterprise customers in Maharashtra and Goa, India. The company provides its connectivity and communication solutions under the Tata Tele Business Services brand name. It offers cloud and software as a services comprising content delivery network, digital survey, document management, cloud CRM, SmartFlo, fee collection, and live chat services; collaboration services, such as audio and web conferencing, international bridging, and webcasting services; data services, including business broadband, secure cloud connect, hub connect, Tata Tele Wi-Fi, smart VPN, Internet lease line connection, L2 multicast, and leased line; and voice services comprising PRI, centrex, SIP trunk, and SmartOffice, a business connectivity solution. The company also provides Internet of Things solutions comprising asset



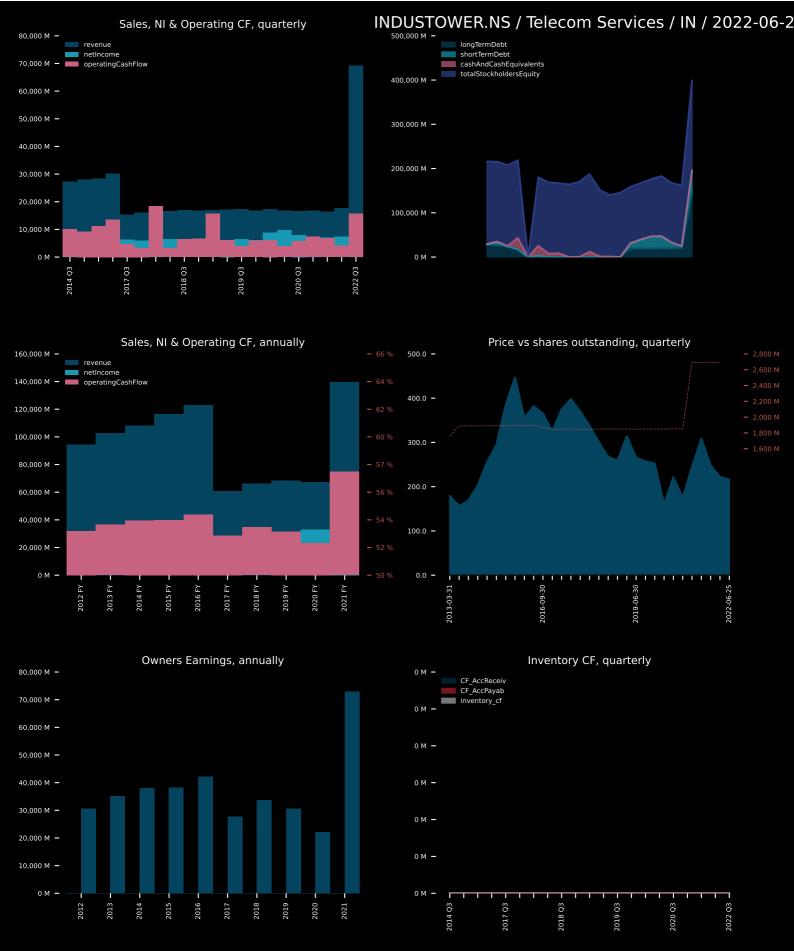
AdEPT Technology Group plc provides unified communication and IT services in the United Kingdom. It operates through two segments, Fixed Line Services and Managed Services. The company offers call and line rental, data connectivity, IP telephony, support, and maintenance services, as well as voice and cloud services. It also provides IT, equipment installation, managed, Wi-Fi, and IT and communications hardware products, as well as cyber security, business continuity, and professional products and services. In addition, the company supplies ICT solutions to schools and others in the education sector. The company was formerly known as Adept Telecom Plc and changed its name to AdEPT Technology Group plc in September 2019. AdEPT Technology Group plc was founded in 2003 and is headquartered in Tunbridge Wells, the



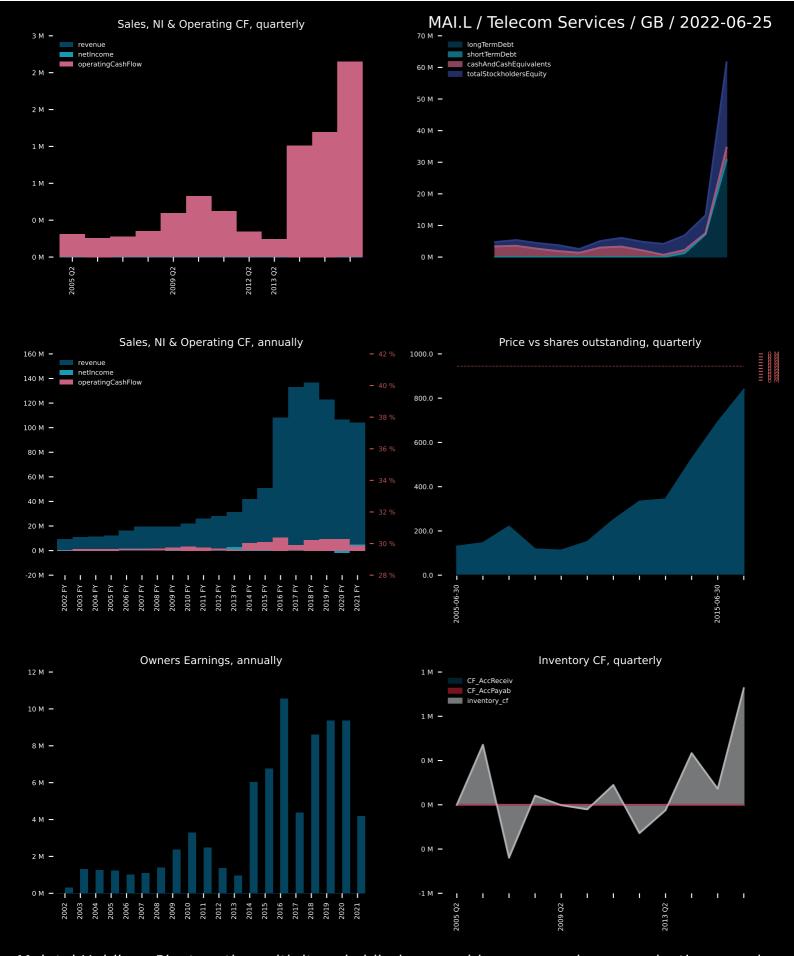
Advanced Info Service Public Company Limited, together its subsidiaries, provides mobile network, fixed broadband, and digital services primarily in Thailand. The company operates through three segments: Mobile Phone Services, Mobile Phone and Equipment Sales, and Datanet and Broadband Services. It is involved in the operation of cellular telephone networks in the frequency of 26 GHz, 700 MHz, 900 MHz, 1800 MHz, 2100 MHz, and 2600 MHz frequencies. The company also distributes handsets, as well as cash cards; and electronic money and electronic payment services. In addition, it provides international telephone service, broadcasting network, and television broadcasting services for various channels, as well as insurance brokerage services. Further, the company offers IT system, content aggregator, and billing and collection outsourcing services; call conter services; and land and building routal



Advanced Info Service Public Company Limited, together its subsidiaries, provides mobile network, fixed broadband, and digital services primarily in Thailand. The company operates through three segments: Mobile Phone Services, Mobile Phone and Equipment Sales, and Datanet and Broadband Services. It is involved in the operation of cellular telephone networks in the frequency of 26 GHz, 700 MHz, 900 MHz, 1800 MHz, 2100 MHz, and 2600 MHz frequencies. The company also distributes handsets, as well as cash cards; and electronic money and electronic payment services. In addition, it provides international telephone service, broadcasting network, and television broadcasting services for various channels, as well as insurance brokerage services. Further, the company offers IT system, content aggregator, and billing and collection outsourcing services; call conter services; and land and building routal



Indus Towers Limited establishes, operates, and maintains wireless communication towers. As of March 31, 2021, it owned and operated approximately 179,225 towers and 322,438 co-locations in 22 telecom circles in India. The company was incorporated in 2006 and is based in Gurugram, India.



Maintel Holdings Plc, together with its subsidiaries, provides managed communications services for the public and private sectors in the United Kingdom and Ireland. It operates through three segments: Telecommunications Managed Service and Technology Sales, Telecommunications Network Services, and Mobile Services. The company provides the management, maintenance, service, and support of unified communications, contact centers, and local area networking technology on a contracted basis on customer premises and in the cloud; supplies and installs project-based technology, professional, and consultancy services to clients. It also offers a portfolio of connectivity and communications services, including managed MPLS networks, security as a service, internet access services, SIP telephony services, inbound and outbound telephone calls and basted IP telephony solutions. In addition, the company provides value



Swisscom AG provides telecommunication services primarily in Switzerland, Italy, and internationally. It operates through three segments: Swisscom Switzerland, Fastweb, and Other Operating. The company offers mobile and fixed-network services, such as telephony, broadband, TV, and mobile offerings, as well as sells terminal equipment; and telecom and communications solutions for large corporations and small and medium-sized enterprises. It also provides cloud, outsourcing, workplace, mobile phone, networking, business process optimization, SAP, and security and authentication solutions, as well as a range of services to the banking industry; Internet of Things solutions; digitization services to the healthcare sector; IT systems for health insurance companies; fixed-line and mobile networks by other

2002 Q1

2018 Q1 2019 Q1

2010 2011

2007 2008 2009

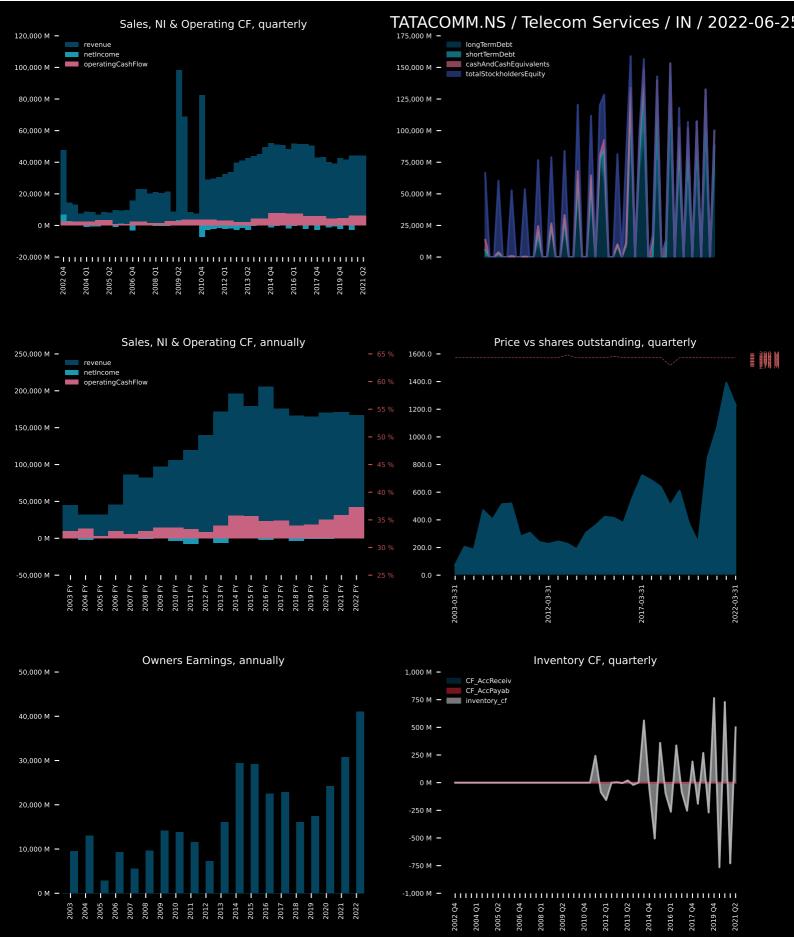
2003 2004 2005 2015

2017

2020



Bharti Airtel Limited operates as a telecommunications company in Asia and Africa. It operates through Mobile Services India, Mobile Services Africa, Mobile Services South Asia, Airtel Business, Tower Infrastructure Services, Homes Services, Digital TV Services, and Others segments. The company's product offerings include 2G, 3G, and 4G wireless services, as well as mobile commerce, fixed line services, high speed home broadband, DTH, and enterprise services, including national and international long distance services to carriers. It also provides voice, data, video, network integration, data center, and managed services, as well as enterprise mobility applications; on-demand entertainment and streaming services, such as music and video; digital payments and financial services; and cloud and data center,



Tata Communications Limited provides telecommunications services worldwide. The company operates through Voice Solutions, Data and Managed Services, and Real Estate segments. It offers voice and data transmission services; Internet connectivity services; and other value-added services, such as unified conferencing and collaboration, managed hosting, mobile global roaming and signaling, transponder lease, and television up-linking, and other managed services, as well as sells and leases bandwidth on undersea cable systems. The company also provides network services, such as virtual private network, WAN Ethernet, Internet access, Internet with MDDoS, private line, and content delivery network services; application aware networking services; and cloud and data center services comprising managed hosting,



Gamma Communications plc provides communications and software services for small, medium, and large sized business. It offers strategic services, such as collaboration, cloud PBX, SIP trunking, and inbound call control services; enabling services, including ethernet, broadband, network, and mobile; and traditional call and line services. The company offers its services through a network of channel partners, as well as directly to end users. Gamma Communications plc was founded in 2001 and is headquartered in Newbury, the United Kingdom.