

# Orange Business Services Global Industrial IoT Services

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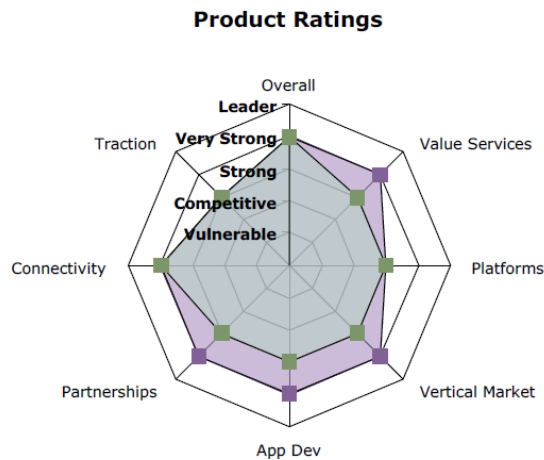
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## PRODUCT ASSESSMENT REPORT - GLOBAL INDUSTRIAL IOT SERVICES

### REPORT SUMMARY:

Orange Business Services continues to develop its IoT activities in support of its strategic position as a global network-native digital services company. In Q3 2022, the company saw strong year-over-year growth in IoT connections.

### SUMMARY



■ Orange Business Services Global Industrial IoT Services
 ■ Product Class Average

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### WHAT'S NEW

- September 2022:** Orange Business Services (OBS), with its IoT Continuum partners, is working with tiko on new solutions for more responsible energy consumption in home heating systems. Orange is providing LTE-M connectivity for 800,00 devices in France to be deployed over five years.
- September 2022:** Veolia partnered with OBS to support the growth of its digital management platform, Hubgrade, the development of an IoT gateway, and the exploration of services around ML.
- May 2022:** Enovacom, an OBS healthcare subsidiary, announced the acquisition of Exelus, a French emergency/day-to-day telemedicine company. Exelus owns the mobile telemedicine solution Nomadec. Enovacom will leverage its telemedicine market experience in networks, 5G, IoT, interoperability, and data security.

## PRODUCT OVERVIEW

<b>Product Name</b>	Orange Business Services IoT
<b>Description</b>	Orange has built a complete end-to-end IoT value chain, allowing customers to collect and ingest the data into cloud-based applications. The Orange IoT portfolio offers a comprehensive set of building blocks for IoT, including certified objects, global connectivity management, managed IoT platforms, advanced analytics, security, consulting, and other professional services. Orange also offers industrialized products, in particular around Smart Tracking, Smart Operation, and Smart Interactions. Orange's three main verticals (e.g., connected cars and products, smart cities and buildings, and Industry 4.0, which Orange Business Services now embraces in one of the five strategic value propositions called Smart Industries) benefit from those business solutions. Orange is also pursuing a range of go-to-market models with third parties: embedded connectivity, co-selling offers, and integration of third-party solutions.
<b>Components</b>	<ul style="list-style-type: none"> <li>• Devices: IoT Journey is the Orange marketplace dedicated to IoT objects and connectivity, where businesses can find more than 135 devices to support their projects. Packaged end-to-end solutions from partners (e.g., bundles combining devices, connectivity, and applications) are also available.</li> <li>• Orange has also formed a partnership with Sierra Wireless, STMicroelectronics, and Lacroix (called 'IoT Continuum') designed to offer enterprises pre-certified and pre-integrated hardware and software building blocks for creating IoT solutions with embedded LTE and 5G connectivity.</li> <li>• IoT connectivity: Orange offers a variety of connectivity solutions to meet all IoT use-case requirements, including its own very strong local cellular networks in France and other Orange affiliate countries; low-power, wide-area (LPWA) networks (e.g., long-range WAN [LoRaWAN] networks deployed at the national level in France and partially deployed in Poland, Romania, and Slovakia; LTE-M networks, now deployed in every European Orange country; NB-IoT in Belgium, Luxembourg, Spain, Slovakia, and Romania; and roaming agreements signed with AT&amp;T, KPN, and Swisscom); and fixed, satellite, radio-frequency identification (RFID), WiFi, and Bluetooth. It also has many roaming agreements allowing Orange to offer mobile coverage worldwide.</li> <li>• Orange deploys mobile private networks as an operator/integrator on the Orange footprint and as an integrator beyond its footprint to support multinational customers worldwide. Orange offers consulting, deployment, and- if requested- the management of the network on behalf of its customers.</li> <li>• IoT managed connectivity platforms to manage cellular connectivity.</li> <li>• Orange's Live Objects platform for IoT device and data management collects, transforms, and exports data from devices regardless of connectivity (e.g., cellular, LPWA, etc.). It also provides customers with three ways to develop their own solutions: low-code programming tools (e.g., Node-Red and IoThink), application programming interfaces (APIs), and as an application enablement platform (thanks to connectors with main cloud environments Orange Cloud for Business, AWS, Microsoft Azure, and Google Cloud). ELK suite is integrated for data analytics and visualization. It is also connected with Splunk, Tableau, Qlik, and Microsoft Azure/Power BI for more advanced analytics needs.</li> </ul>

- IoT business applications: End-to-end industrialized products such as Smart Tracking, Smart Operations, and Smart Interactions.
- Security solutions from Orange Cyberdefense, including audit and CyberSoC capabilities at both the design and operations phases. Orange launched a security option based on machine learning (ML), called 'Controlled,' to monitor the customer's IoT mobile traffic. It also has mobile device security solutions adapted for the automotive industry (AutoMobile Security).
- AI and data analytics services through Orange Digital & Data business unit with 3,900 data and artificial intelligence (AI) experts in business intelligence (BI), data visualization, data analytics, and data science/AI.
- Consulting, integration, and end-to-end build-and-run solutions, all with local and vertical skills.
- Connectors to build customer solutions with various partners leveraging its ecosystem, such as ABB France (i.e., a leader in energy technologies and automation) for smart building services and Quuppa for smart tracking solutions.
- The partnership with Siemens has produced Industry 4.0 solutions, such as motor condition monitoring, smart factory journey, and robot condition monitoring.
- Orange has developed an ecosystem of partners with local integrators (e.g., Pure Integration in the US), with module makers to develop its indirect go-to-market (e.g., Cavli Wireless), and with application providers to propose end-to-end solutions (e.g., SharingCloud, Communithings, Energisme).
- Multisourcing Service Integration (MSI) sees Orange take over the end-to-end management of multiple mobile and IoT connectivity providers on behalf of customers.
- IoT customer support offers managed services, including 'managed and optimized' (single point of contact, regular meetings), 'managed implementation' (IoT project deployment), 'device test kit' (test environment), and 'controlled' (enhanced visibility into security status of connected devices).

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#### Key Customers

- KDDI for Toyota, Suzuki, and Mazda
- C Security Systems
- Abu Dhabi Municipality
- City of Marseille (SmartSeille)
- City of Doha (Qatar)
- Cotecna
- Cargotec
- De Beers Marine
- Dobroflot
- McConnell Dowell
- Port of Antwerp
- Stellantis
- Rospadskaya
- Safran Aircraft Engines

- Saint-Quentin-en-Yvelines urban area
- SNCF
- SHV Energy

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#### Key Rivals

- AT&T
  - Deutsche Telekom
  - Telefónica Business Solutions
  - Verizon Enterprise Solutions
  - Vodafone Global Enterprise
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## ESSENTIAL ANALYSIS

### STRENGTHS

- **Comprehensive Portfolio:** Orange's IoT portfolio offers a comprehensive set of building blocks for IoT with global connectivity management, certified objects, managed IoT platforms, advanced analytics, consulting, and professional services. Orange also offers industrialized products, such as Smart Tracking, Smart Operation, and Smart Interactions, which support three market segments: connected cars and products, smart cities (and buildings), and Industry 4.0.
- **Technical Resources:** Orange has over 750 IoT experts, as well as 3,900 data, digital, and AI experts. It also has 2,100 security experts in its Orange Cyberdefense organization and 2,600 cloud experts in its Orange Cloud for Business unit. The Orange group has 8,000 people working in research and development, with about 10% of this resource dedicated to Orange Business Services.
- **Wide-Ranging Connectivity:** Orange has a mobile network in 26 countries, global multiprotocol label switching connectivity, 600+ roaming agreements, WiFi, satellite (including a new IoT service for maritime), radio/mesh networks, and a LoRa network in France covering 95% of the population. It has both LTE-M and narrowband IoT (NB-IoT) in Belgium, Luxembourg, Spain, Slovakia, and Romania, with LTE-M in every European country in which it operates, plus in the US and Japan. Orange has also launched 5G in six countries in Europe.
- **Connected Cars and Products:** Orange's vertical approach has delivered sustained success in the automotive space. Orange now has several Tier 1 automotive customers in Europe, Asia, and North America. Meanwhile, its Connected Products vertical targets OEMs in Europe and device makers worldwide to help accelerate IoT device development, leading to large scale deployments.

### LIMITATIONS

- **Strong Competition:** Vodafone continues to remain the European leader, leveraging its large wireless network, dedicated IoT business unit, internally developed Global Data Service Platform (GDSP), and acquisitions of integrators and connected car specialists.
- **Catching Up:** Orange has seen strong year-over-year growth (+20% in Q3 2022) in IoT connections with 32.3 million, but its installed base still trails Vodafone and other key rivals by a significant distance.
- **Competitive Differentiation:** While Orange has many strengths, other operators and large service integrators are differentiating with end-to-end vertical solutions; others have a more global customer base. Many use the same partners as Orange, making it difficult for differentiation on both sides.

- **Strong Foundation:** Orange's IoT business has been combined with enterprise mobility to form Smart Mobility Services- keeping connectivity and digital transformation linked. In group financial results, mobile revenues within the enterprise segment grew by 3.5% YoY to EUR228 million in Q3 2022, while the digital and data portion of Enterprise IT & Integration Services grew 6.8% YoY to EUR817 million.

## CURRENT PERSPECTIVE

### VERY STRONG

Orange Business Services is very strong in the IoT services market, having steadily built the business from basic machine-to-machine (M2M) connectivity to now include end-to-end solutions that span many network types, horizontal and vertical applications, advanced data analytics, and deep professional expertise in support of development, integration, and operation of IoT deployments. Key benefits include its own IoT service delivery and application enablement platforms; widespread network coverage across fixed, cellular, and local access technologies; deep experience in mobile private networks; expertise in security and cloud; and the ability to serve multinational corporations (MNCs) internationally, as well as SMEs and national enterprises locally through Orange operating companies. These strengths give it the flexibility to deliver IoT solutions in a variety of business models, whether connectivity only is required or a business requires an end-to-end solution.

On the connectivity side, Orange is capable of supporting almost any potential network type. Cellular solutions include embedded SIMs (eUICC, available globally and across 18 European countries for business-to-consumer [B2C] services), which have led to large connected car deals, but Orange also provides LPWA support with LoRaWAN, LTE-M, and NB-IoT. In doing so, the provider can offer the right network technology for each use case, rather than leading with a particular network and trying to force solutions to fit the technology. Orange has now launched 5G in France, Romania, Poland, Spain, Luxembourg, and Slovakia, with which it will focus on mobile broadband and critical IoT use cases. It has also extended its LTE-M footprint to almost all of its European mobile network operators, entered into a partnership with SES Networks for satellite IoT connectivity, and expanded its mobile private network portfolio.

Orange recognized early that a vertical approach is necessary to truly deliver solutions that are fit for purpose. It is now targeting three key 'verticals' - connected cars and products, smart cities and buildings, and Industry 4.0. In the highly demanding automotive sector, it has found that its strict compliance to eUICC standards has helped it win big in connected car. This was reinforced again in 2021 with its deal supplying integrated SIMs for Lynk & Co, a joint venture (JV) between Geely Auto Group and Volvo. In smart cities (and smart buildings), a strong portfolio of customized and product/service offerings and an ability to meet the stringent IT requirements of public sector jurisdictions have resulted in 100 contracts, both large and small. Orange has put emphasis on energy management and has developed building energy consumption optimization and environmental performance solutions. In Industry 4.0, Orange is finding traction in applications for the mobile workforce, including field personnel, in predictive maintenance, in asset tracking, and in connecting operational technology systems. It also has a partnership with Siemens Digital Industries to target French manufacturers with integrated factory automation systems, comprising of private 5G networks, cybersecurity, and IoT platforms.

Orange reports an installed base of 32.3 million IoT connections (including approximately 15 million automotive devices) across 35 countries, generating revenue from connectivity and services (including consulting for use-case development, application development, and integration). The expansion of

Orange's value-add in IoT services (beyond connectivity) is, in particular, based on all of the IT capabilities it has acquired, developed, and reinforced over the years in cloud, AI and data analytics, cybersecurity, consulting, and integration areas. The acquisition of Business & Decision, with its expertise in BI and data science, significantly strengthened Orange Business Services' operations in data analysis and governance in France and internationally. Orange's go-to-market is bolstered by complementary capabilities in both security services and support (Orange's MSI portfolio for services integration has helped it win large IoT deals). Network operator partners are extending its reach and bringing in new customers: for example, with China Telecom's requirements in Europe or with KDDI, providing access to Japanese customers. Large and small technology vendors are also valuable IoT partners. The recently established IoT Continuum partnerships with Sierra Wireless, STM Microelectronics, and Lacroix are bringing a more coordinated approach to cellular IoT solution building, saving both Orange and its customers time (and costs) on qualifying suppliers and integrating components. This has been validated in a new multi-year contract with tiko to connect 800,000 devices via LTE-M. Partner Siemens is an Industry 4.0 leader, increasingly providing Orange with a powerful co-selling approach that can successfully target enterprises at both the chief information officer and line-of-business levels. Orange has also been successful in B2B2X models in support of vertical/application specialists rolling out digital services (e.g., Octo, for usage-based insurance in Italy).

## COMPETITIVE RECOMMENDATIONS

### PROVIDER

- **Private Networks Integrator:** Orange has experience in deploying and integrating private networks for multinational customers worldwide. While highlighting that experience, it should emphasize how it can be leveraged to add value to its IoT solutions, and vice versa, particularly for customers in industrial verticals.
- **Clear Strategic Focus:** Orange's corporate strategy of grow/scale/transform is perfectly suited to its IoT proposition, offering value-added services on top of connectivity. Its IoT unit should benefit from full support from corporate to address its market opportunity.
- **Leverage the MNC Base:** Orange's industrial IoT (IIoT) approach is often country-focused, but it should make more effort to leverage its base of over 3,000 MNCs to provide solutions at a global level by tying in IIoT with other connectivity and cloud services, as well as evolving bespoke solutions into productized offerings for the broader market.

### COMPETITORS

- **MNCs:** Other global operators can note that they have more multinational deals and substantially larger and faster-growing installed bases of connected devices compared to Orange. They can note that the majority of Orange IoT engagements appear to be in-country (where Orange has operations) and are also mostly for connections within the same countries.
- **Application Development:** Orange has unusually extensive systems integration and application development capabilities. Competitors should delve more deeply into app development and analytics or lose business to Orange and to traditional internet telephony service providers. They can also exploit edge capabilities in the cloud to encourage third-party app developments.
- **End-to-End Security:** Many operators only provide security that touches their network or end devices, although lack of security is a primary deterrent to IoT deployment. They should use partnerships if they don't have their own resources to provide IoT security solutions that span end devices, edge computing, networks/cloud services, data centers, and applications.

## METRICS

### VALUE-ADDED SERVICES

<b>Rating:</b>	<b>Very Strong</b>
<b>Consulting Services:</b>	Orange has end-to-end expertise in IoT including information systems integration, project management, AI, cloud, private networks, and security and privacy management. It has 750 identified IoT experts and 3,900 data, digital, and AI experts. Specific consulting capabilities include: definition of ecosystems, business analysis, analysis of enterprise value chain, evaluation/ideation process, co-innovation support (e.g., with Schneider), use-case identification, and development of business case and business plan. Also provides connectivity and smart technical solutions, help in choosing relevant partners, expertise in IT integration and network design, and standardization. Vertical expertise is also available, aligned with Orange focus: connected cars and products, smart city and buildings, Industry 4.0, and healthcare. A recently expanded partnership with Siemens adds consulting, integration, and app development skills, as well as a strong go-to-market partner with a large customer pipeline.
<b>Pro Services:</b>	750 IoT specialists, many involved in development & delivery; team leverages local integrators to provide security, integration, and application development and management.
<b>Security Services:</b>	End-to-end IoT security with a focus on objects and perimeter security. Orange has launched a security option in collaboration with Ericsson called 'IoT Services Controlled' based on ML, to monitor the customer's IoT mobile network. It also leverages Orange Cyberdefense, Orange Group's cybersecurity unit (with over 2,100 security experts), to provide audit and CyberSoC solutions. Performs 50 industrial plant security audits per year, provides security advice to device manufacturers, runs 70 secure data centers and operations with ISO 27001 certification, and analyzes 50 billion security events a year. Identity management of employees and customers is a prerequisite to support GDPR privacy requirements in Europe.
<b>Data Analytics:</b>	Approximately 3,900 digital experts in data intelligence and digital solutions including a data analytics consultancy team, data architects, data scientists, data analysts, developers, and big data integrators. Customers can build and host their infrastructure and big data tools in a secure cloud environment. Also offers Flux Vision tool to measure population movements and attendance at specific areas by analyzing technical data points from Orange's mobile network.

## PLATFORMS

<b>Rating:</b>	<b>Strong</b>
<b>Connectivity Platforms:</b>	IoT Managed Global Connectivity portfolio has two product lines: IoT Connect Express and IoT Connect Advanced. Offer includes access to the Orange global mobile network enhanced by alliance of operators and roaming agreements. SIM and connectivity management includes: IoT dedicated SIM cards portfolio, web-based connectivity management tools (portal, APIs) to manage and monitor mobile lines, with a global invoice mechanism. Provides SIM lifecycle management, traffic monitoring, subscriptions inventory and customized alarms, eUICC, and B2C connectivity. Orange uses Ericsson's IoT Accelerator connectivity management platform and a proprietary connectivity management platform called Malima.
<b>App Enablement Platforms:</b>	Orange App Enablement Platform (AEP) for developers, integrators, and professional services is called Live Objects. Communication layer includes: SMS, mail, SIM, LPWA Manager, MQTT/REST bridges, cloud-to-cloud platforms adapters, protocol adapter. Application layer includes: admin, billing, user management; device, data and message management, and application tools (dashboards, visualization, rules, event processing). Three main ways to develop: low-code programming tools (Node-Red and lothink), APIs, and AEP thanks to connectors with main cloud environments Orange Cloud for Business, AWS, Microsoft Azure, and Google Cloud. Partnerships with Siemens (MindSphere and Digital Industries portfolio) enhance app development options for customers.
<b>Differentiators:</b>	Orange IoT Platform is both horizontal (API mode) and supports verticalization, derived from use cases from LoRa customer base. Orange also invests in its national and international coverage (for instance, in France with 4,900 LoRa gateways for indoor deployments and for national outdoor coverage, covering 95% of the country). In many countries, Orange offers both LTE-M and NB-IoT. The IoT Journey online marketplace (formerly Datavenue), launched in 2018, allows customers and developers to order objects and postpaid connectivity. Packaged end-to-end solutions from partners (bundles combining devices, connectivity, applications) are also available.

## Vertical Markets

<b>Rating:</b>	<b>Very Strong</b>
<b>Target Verticals:</b>	Orange has named three 'chosen verticals': Smart Cities & Buildings, Industry 4.0, and Connected Cars & Products. Orange Business Services' goal is to co-innovate with verticals for the 5G mobile era.
<b>Partnerships for Verticals:</b>	Different kinds of partners for each component. Data & objects providers with vertical relevance or standards and security expertise; Transport: operators with complementary & competitive roaming; IoT platform providers with recognized leadership, in country presence, or vertical expertise; integrators/consultants with local recognized skills. Key partners by vertical for joint go-to-market: Fleet/OEM- Ericsson, KDDI; smart cities and buildings- ABB (also for energy and environmental performance); Industry 4.0- Siemens and local integrators.



## App Dev

<b>Rating:</b>	<b>Very Strong</b>
<b>App Dev Capabilities:</b>	The Orange Digital and Data strategic business unit develops applications to help customers build the digital experience with on-premises, hybrid, or cloud applications. It has 3,900 Data & AI experts and 400 developers who build over 1,000 applications per year. Orange has also launched its Orange Fab startup accelerator across 19 countries, which includes IoT as a target development area.
<b>Application Examples:</b>	Orange's smart tracking solution enables shop floor personnel at SPS Technologies to quickly identify the location of specific production jobs and save time by avoiding the manual search time associated with previous approaches. Among other use cases, operating staff from local authority of Saint Quentin en Yvelines in France receive alerts from Orange smart operations solution in case of flooding risk related to overflowing rainwater ponds. This solution enables remote maintenance, simplified management, and reduced travel for operating staff. Gecina is now using Orange smart office solution for more attractive, modern, and intelligent office spaces via presence detection, signaling, and booking for various areas, including desks and meeting rooms.
<b>Developer Resources:</b>	More than 4,650 dedicated experts for IoT, data, and analytics. Provides third-party data sources: data catalog, outdoor and indoor mobility data; management platform for data collection and processing; end-to-end expertise: IS integration and project management, with data scientists, security and privacy experts. Has solid UX/UI expertise and tested methodologies.

## Partnerships

<b>Rating:</b>	<b>Very Strong</b>
<b>Application Partners:</b>	ABB, SharingCloud, Communithings, Energisme, Siemens
<b>Service Provider Partners:</b>	Partners with operators with complementary and competitive roaming. Member of the Global M2M Association along with Deutsche Telekom, Telecom Italia, Telia, SoftBank, Bell Canada, and Swisscom. GMA and Bridge Alliance provide cellular connectivity in over 100 markets. LoRa Alliance partnerships. KPN (Netherlands) and Swisscom (Switzerland) roaming for LTE-M in Europe, as well as AT&T in the U.S. and Mexico. Go-to-market alliance with China Telecom and KDDI. Partners for indirect channel go-to-market include Cavli Wireless and local integrators such as Pure Integration in North America.

## Connectivity

<b>Rating:</b>	<b>Very Strong</b>
<b>Cellular Footprint:</b>	2G/3G/4G in Europe with 98% coverage, as well as 17 countries in Africa and the Middle East. Plans are in place to switch off 2G and 3G in France and other European markets between 2025 and 2030. 5G covering 900 French municipalities (August 2022) and further plans to cover 1,100 towns in Spain by end of 2022, along with coverage in Belgium, Luxembourg, Poland, Slovakia, Romania, and Moldova. Currently 5G NSA in France, Spain, Poland, Romania, and Slovakia, with 5G SA planned for 2023. Supports over 32.3 million IoT connections/objects, including LoRa connections. Roaming coverage (including via GMA and Bridge Alliance) provide cellular connectivity in 157 markets, including 5G NSA agreements in 23 countries.
<b>LPWAN Support:</b>	Public LoRaWAN network covers 95% of French population and several cities in Romania and Slovakia; Orange reaffirmed its support of LoRaWAN until 2027. LTE-M networks, now deployed in every European Orange country, and now 49 open routes for LTE-M roaming covering 18 countries in Europe, North America and APAC (+5 ongoing test). NB-IoT in Belgium, Luxembourg, partially in Spain, Slovakia, and Romania.
<b>Other Access Options:</b>	Fixed, WiFi, RFID for asset tracking, Home Gateway (e.g., Live Intercom), Bluetooth/zWave/ZigBee, and UWB. Orange is testing satellite IoT connectivity including integration with LoRaWAN. The IoT Device Catalogue has over 100 devices, including gateways, modems, modules, and starter kits (LTE-M, LoRa, LTE-M, and NB-IoT) for numerous applications: asset tracking, smart metering, smart operations, smart buildings, and daily life.

## Traction

<b>Rating:</b>	<b>Strong</b>
<b>Number of Connections:</b>	Q2 2022: about 32.3 million cellular and LPWAN connections. Connections by vertical: automotive/transport (50% of connections); smart cities and territories (25% of connections); industry/manufacturing (15% of connections); and daily life & healthcare (10% of connections).
<b>Named Customers:</b>	LivaNova, Qualcomm Life, Medical Objects (healthcare); SITA, Splitsecnd, Transics (connected transportation); flaik, Cotecna (track and trace); IntraTone (security systems); Renault, PSA, SNCB, Tesla, Peugeot (connected car); SIA (point of sale); m2o city (JV with Veolia Water), Lubomierz (utilities); Dacom (smart agriculture); Manitowoc (remote crane monitoring solution); EMT Malaga (fleet management and connected buses); SafeFleet (asset and vehicle tracking); WayRay (automotive aftermarket); C&P Rental (fleet management, Singapore); Tractive, Yummypets (GPS + cellular trackers for pets); Smartseille (eco-city in Marseille), Qatar, Abu Dhabi Municipality, Digital City (Saudi Arabia), Dubai Silicon Oasis, Alba Lulia Romania (smart city); Harmonie Mutuelle (insurance, remote assistance); Hertz, Viasat (service providers); Vinci Autoroutes (asset management); e.l.m. leblanc, Securitas (daily life); Dobroflot (fuel optimization); Veolia (water metering/monitoring); SHV Energy (smart gas tanks); McConnell Dowell (construction sites); Rospadskaya (coal mining in Russia); Port of Antwerp; Schneider; KDDI for Toyota and Mazda.