Overview of the TAM Forecast Database

September 2020

Internet of Things
AI
Hyperconnectivity
HMI
Data Sharing
Edge
RPA
Robotics
3D Printing
PLM
Distributed Ledger
Future Tech

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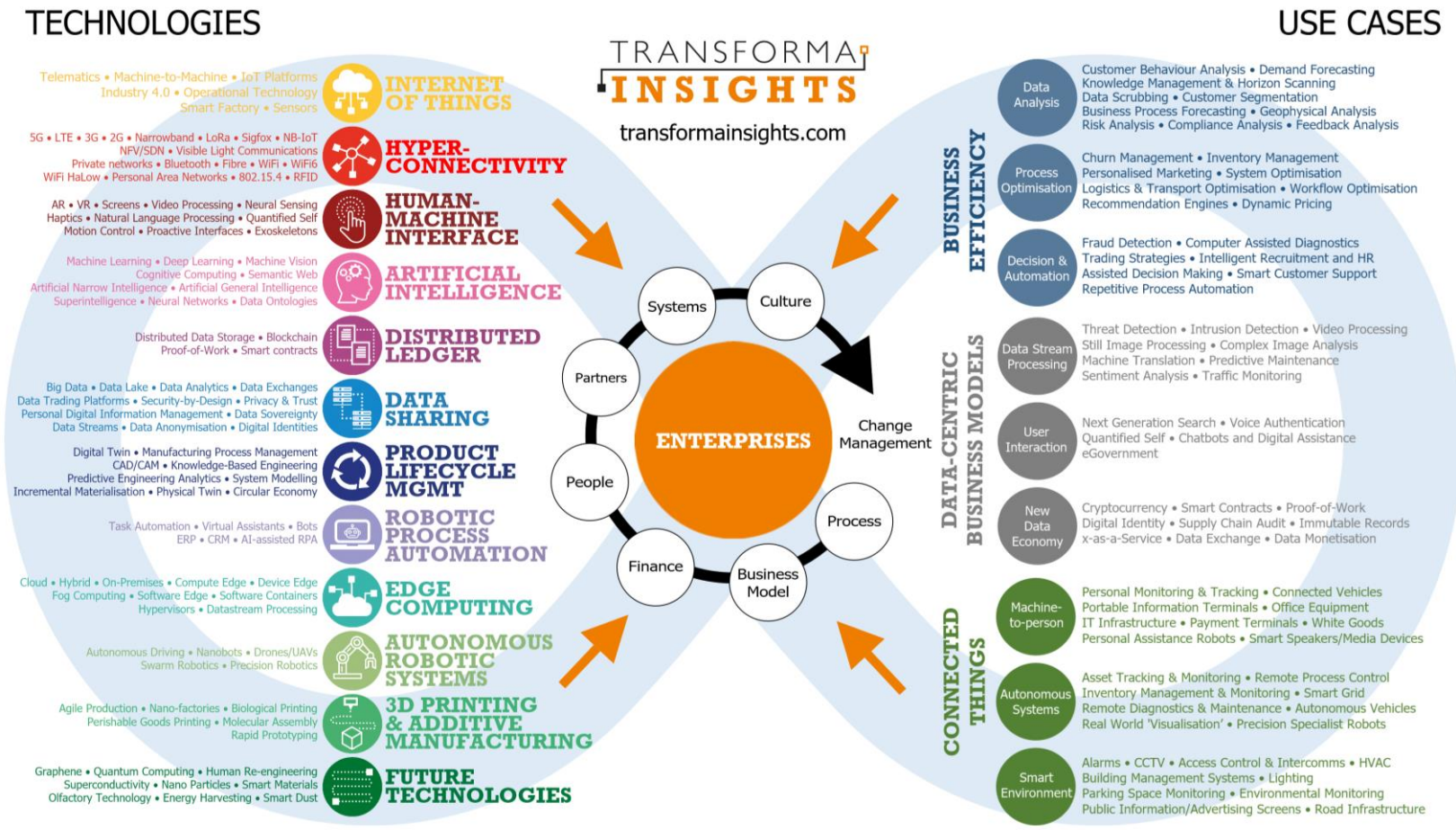
Introduction

- This document provides details of Transforma Insights' TAM Forecast Database.
- The TAM Forecasts provides our quantitative view of the market opportunity associated with Digital Transformation and all of the associated technologies.
- For information about Transforma Insights more broadly, please see the '*About Transforma Insights*' document which gives an overview of the organisation and all of its products and services.

The Market Map is the basis for all of our forecasts



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Transforma Insights forecasts overview

Two forecast types

Market Demand forecasts
- End user adoption
- Devices and associated revenues
- E.g. Smart meters in Poland
- End user spend and other metrics: device count; connectivity technology; etc.

Supplier Investment forecasts
- Value chain investment
- Spend on software and services
- E.g. Machine Translation investment by South Korean fridge manufacturer
- Supplier investment (vendor revenues)

Phased delivery

Supplier Investment forecasts
- Published January 2020

Market Demand forecasts
- Connected Things (Phase 1) – May 2020
- Connected Things (Phase 2) – Sep 2020

Market Demand forecasts
- Data-Centric Business Models – late 2020
- Business Efficiency – late 2020

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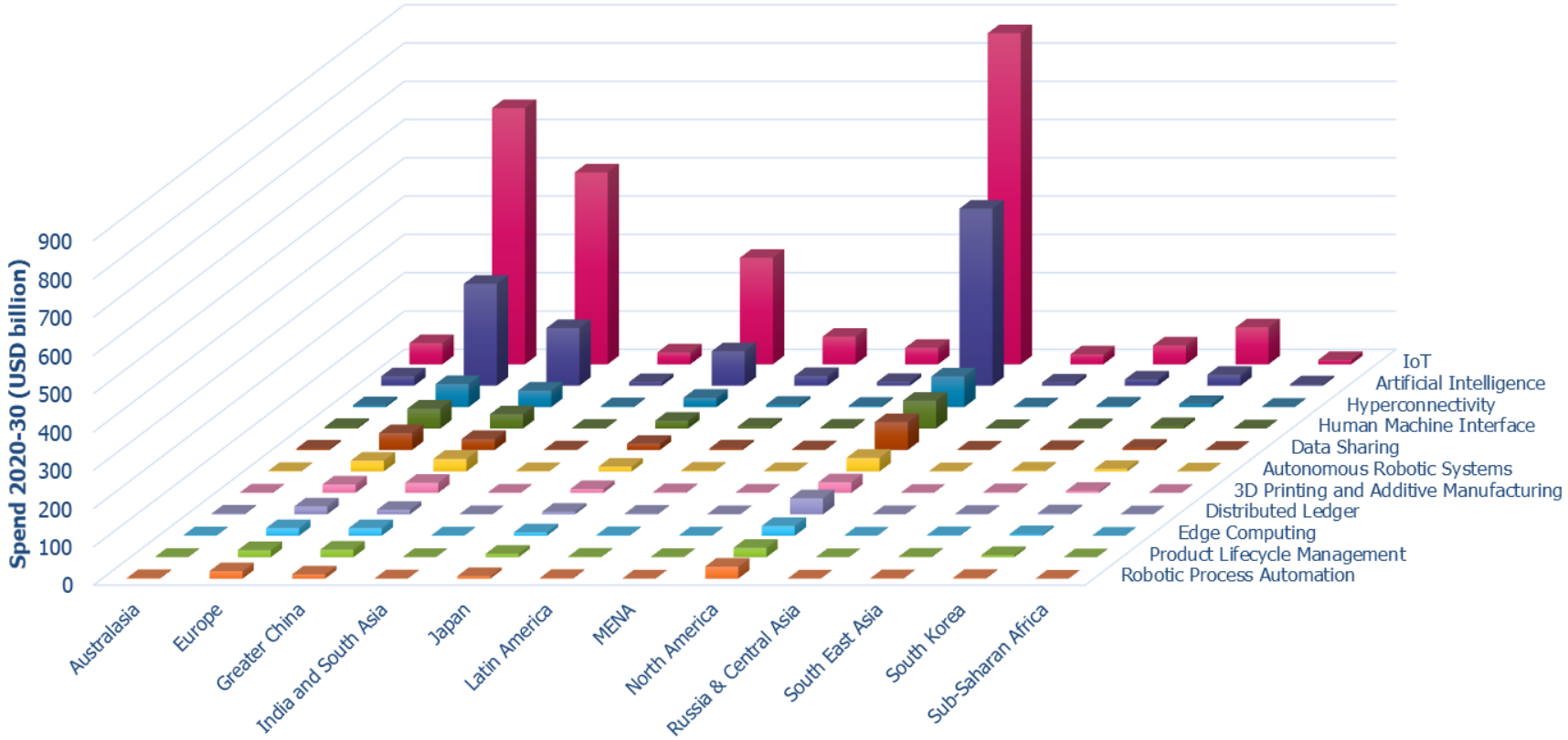
Supplier Investment forecasts launched in Jan 2020

Annual Digital Transformation investment by technology family, 2020-2030
[Source: Transforma Insights, 2020]



- **Total investment between 2020 and 2030 will be USD5 trillion.**
- **IoT (54%) and AI (22%) collectively account for the lion's share.**
- **North America (35%), Europe (24%), China (18%) and Japan (10%) account for 87% of DX investment.**
- **North America consistently the largest in every category, although China is more-or-less level in 3D Printing & Additive Manufacturing, Autonomous Robotic Systems, Edge Computing and Product Lifecycle Management.**

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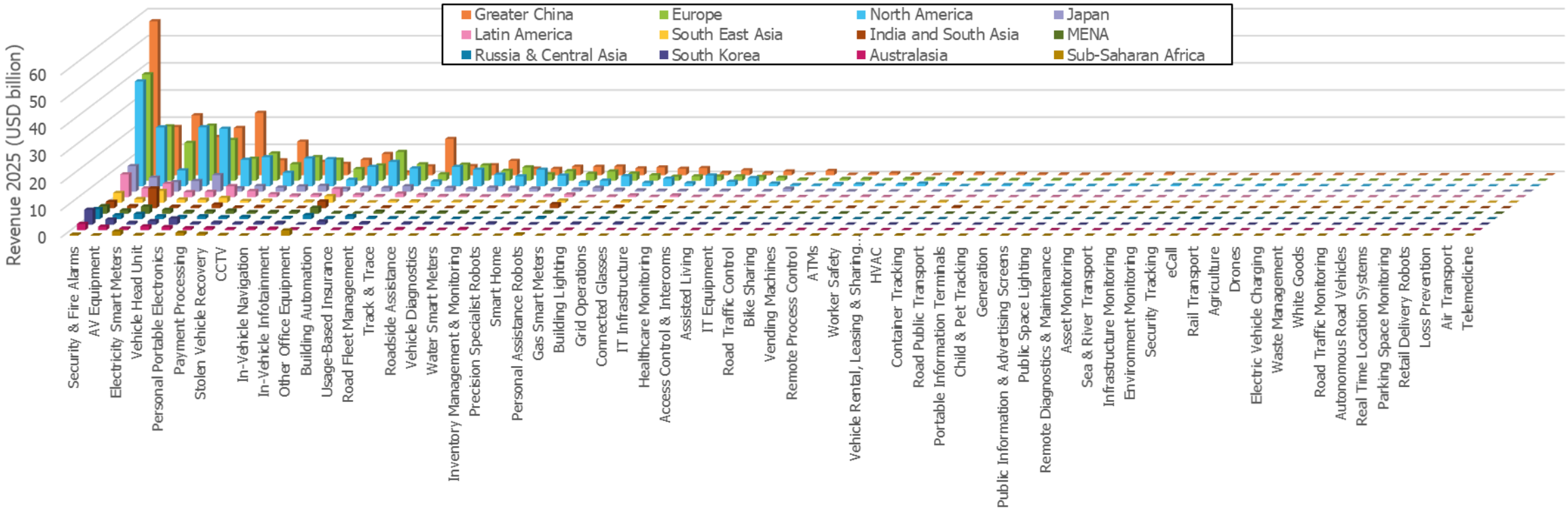
IoT 'Connected Things' Forecast launched May 2020

Annual IoT spend by Application Group and Geography, 2025
[Source: Transforma Insights, 2020]



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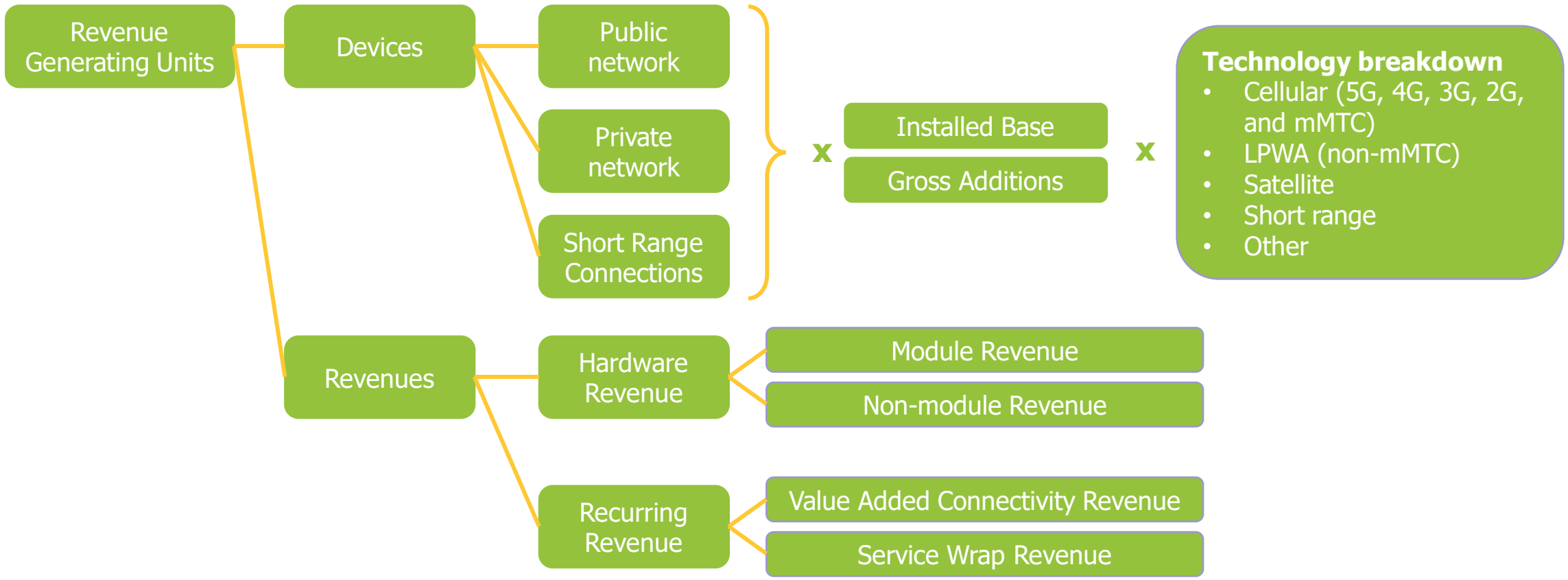
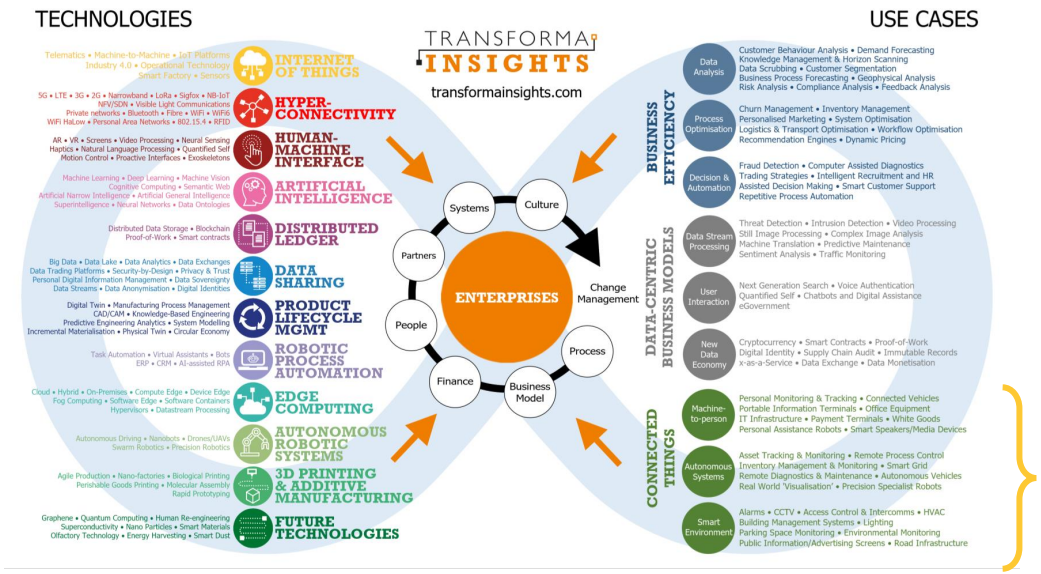
‘Connected Things’ forecast metrics



Detail of 'Connected Things' Use Cases



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Parameters of published forecasts

Industry Sectors (19)
- Agriculture, Forestry & Fishing
- Mining & Quarrying
- Manufacturing
- Electricity, Gas, Steam & A/C
- Water Supply & Waste Management
- Construction
- Retail & Wholesale
- Transportation & Storage
- Accommodation & Food Service
- Information & Communication
- Finance & Insurance
- Real Estate
- Professional, Scientific & Technical
- Administrative
- Government
- Education
- Health & Social Care
- Arts & Entertainment
- Other Services

DX12 Technologies (12)
- 3D Printing & Additive Manufacturing
- Artificial Intelligence
- Autonomous Robotic Systems
- Data Sharing
- Distributed Ledger
- Edge Computing
- Future Technologies
- Human Machine Interface
- Hyperconnectivity
- Internet of Things
- Product Lifecycle Management
- Robotic Process Automation

Regions (12) +196 countries
- Australasia
- Europe
- Greater China
- India & South Asia
- Japan
- Latin America
- MENA
- North America
- Russia & Central Asia
- South East Asia
- South Korea
- Sub-Saharan Africa

Business Efficiency Use Cases (26)
- **Data Analysis:** Customer Behaviour Analysis; Feedback Analysis; Knowledge Management & Horizon Scanning; Demand Forecasting; Data Scrubbing; Customer Segmentation; Business Process Forecasting; Geophysical Analysis; Risk Analysis; Compliance Analysis
- **Process Optimisation:** Dynamic Pricing; Churn Management; Inventory Management; Personalised Marketing; System Optimisation; Logistics Optimisation; Transportation Optimisation; Workflow Optimisation; Recommendation Engines
- **Decision Support & Automation:** Fraud Detection; Computer Assisted Diagnostics; Trading Strategies; Intelligent Recruitment and HR; Assisted Decision Making; Smart Customer Support; Repetitive Process Automation

Data Centric Business Models Use Cases (23)
- **Data Stream Processing:** Threat Detection; Intrusion Detection; Video Image processing; Still Image Processing; Complex Image Analysis; Machine Translation; Predictive Maintenance; Sentiment Analysis; Traffic Monitoring
- **User Interaction:** Next Generation Search; Voice Authentication; Quantified Self; Chatbots and Digital Assistance; eGovernment
- **New Data Economy:** Cryptocurrency; Smart Contracts; Proof-of-Work; Digital Identity; Supply Chain Audit; Immutable Records; x-as-a-Service; Data Exchange; Data Monetisation

Connected Things Use Cases (27)
- **Machine-to-Person:** Personal Monitoring & Tracking; Smart Speakers & Media Devices; Portable Information Terminals; White Goods; Office Equipment; IT Infrastructure; Payment Terminals; Connected Vehicles; Personal Assistance Robots
- **Autonomous Systems:** Asset Tracking & Monitoring; Inventory Management & Monitoring; Remote Diagnostics & Maintenance; Remote Process Control; Real World 'Visualisation'; Smart Grid; Autonomous Vehicles; Precision Specialist Robots
- **Smart Environment:** Security/Fire Alarms; CCTV; Access Control & Intercoms; HVAC; Building Management Systems; Lighting; Environmental Monitoring; Public Information/Advertising Screens; Parking Space Monitoring; Road Infrastructure Monitoring & Control

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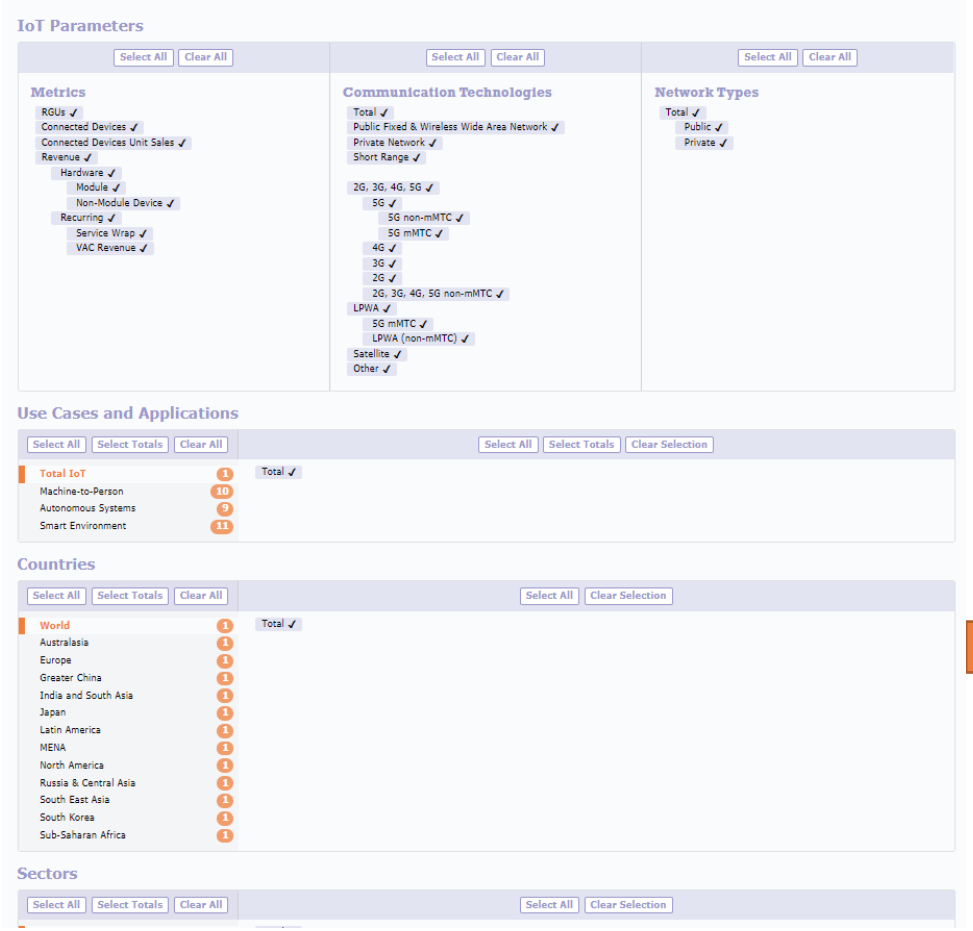
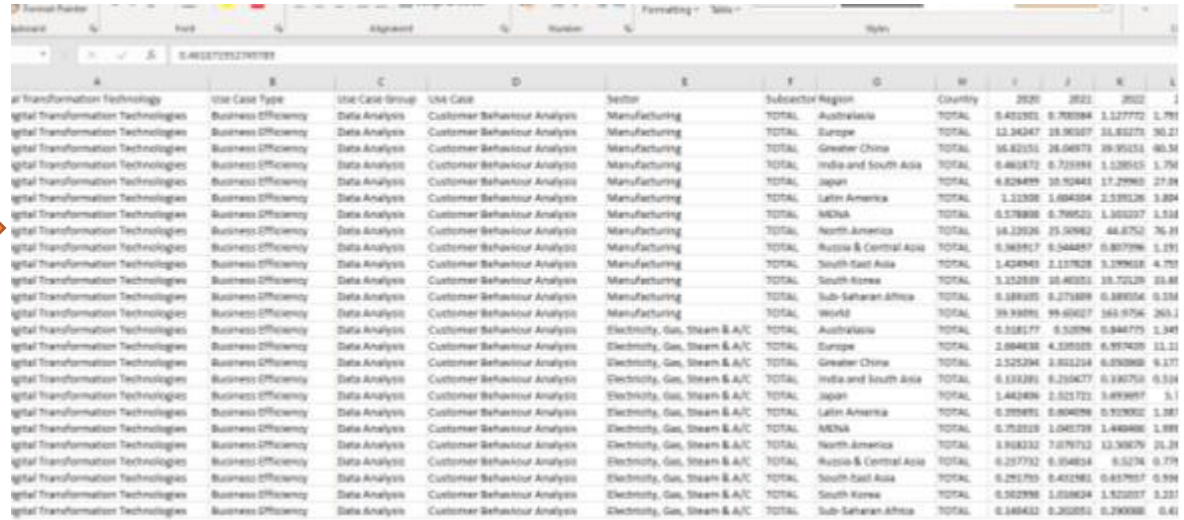


- Online dashboard where you can select technology, vertical, use case and region.
- Outputs to a spreadsheet.



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For more information

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Definitions: IoT 'Connected Things' Parameters

Parameters	Definition	Notes
RGUs	Revenue Generating Units	The number of separate billing instances with which connected devices are associated. In some instances there might be multiple RGUs per device (e.g. multiple connected car services). In others there are multiple devices per RGU (e.g. a building automation system).
Connected Devices	Number of devices connected for the purposes of remote monitoring, control or aggregation of data.	Figure is for year end.
Gross Additions	The number of units sold in a calendar year.	Figure is for number of additions in the year, calculated based on new additions_to the installed base plus replacements.
Revenue	Annual spend by end customers on IoT hardware, connectivity and services.	A sum of Hardware and Recurring revenue.
Revenue - Hardware	Annual spend by end customers on IoT hardware.	Based on revenue per item for gross additions. Divides between 'Module' and 'Non-Module' revenue.
Module	Share of hardware accounted for by communications module (or equivalent).	
Non-Module Device	Share of hardware excluding Module.	
Revenue - Recurring	Annual spend by end customers on IoT services.	Based on annual spend per active device. Divides between 'Service Wrap' and 'VAC Revenue'
Service Wrap	Share of annual spend accounted for by the end user service associated with the connected device.	For example a fleet management service associated with a connected vehicle.
VAC Revenue	Value-added Connectivity. Share of annual spend accounted for by connectivity.	Covers traffic, connectivity management, connectivity platforms and associated services.
Public Fixed and Wireless Wide Area Networks	All fixed and wireless/cellular technologies including 2G, 3G, 4G, 5G, fixed line and others.	
2G, 3G, 4G, 5G	All wireless/cellular technologies (2G, 3G, 4G, 5G).	Comprises a sum of the figures for 2G, 3G, 4G and 5G (including both mMTC and non-MMTC).
5G	Fifth Generation mobile networks.	Can be deployed as a public or private network.
5G non-mMTC	Fifth Generation mobile networks excluding mMTC devices.	
5G mMTC	Low Power Wide Area as part of the 3GPP standard, specifically 5G massive Machine Type Communication (mMTC).	A range of technologies with multi-year battery life, low throughput capability and low unit costs. Includes the 3GPP technologies NB-IoT (LTE NB1) and LTE M1 which have been collectively placed under the umbrella of 5G mMTC).
4G	Fourth Generation mobile networks.	Comprises LTE (3GPP Long Term Evolution) and WiMAX. Can be deployed as a public or private network.
2G, 3G	Second and Third Generation mobile networks.	Includes GSM (GPRS, EDGE), CDMA, W-CDMA and CDMA 1x EVDO and other similar technologies.
2G, 3G, 4G, 5G non-mMTC	All cellular technologies (2G, 3G, 4G, 5G) but excluding mMTC devices.	
LPWA	Low Power Wide Area	A range of technologies with multi-year battery life, low throughput capability and low unit costs. Can be deployed as a public or private network.
5G mMTC	Low Power Wide Area as part of the 3GPP standard, specifically 5G massive Machine Type Communication (mMTC).	A range of technologies with multi-year battery life, low throughput capability and low unit costs. Includes the 3GPP technologies NB-IoT (LTE NB1) and LTE M1 which have been collectively placed under the umbrella of 5G mMTC).
LPWA (non-mMTC)	Low Power Wide Area (excluding 3GPP mMTC devices).	A range of technologies with multi-year battery life, low throughput capability and low unit costs. Includes LoRa and Sigfox.
Satellite	Two-way connectivity between a satellite and a device.	Simple GPS devices are not included. The backhaul must involve the satellite.
Short Range	Any local area network (LAN) including WiFi, Zigbee, Bluetooth and Ethernet.	Ultimately these devices will connect via a gateway with wide area connectivity.
Other	Any other network by which a device is connected, e.g. Lonworks, Powerline.	
Public Networks	A network owned and run by a network operator to support multiple clients. Includes connections supported via private network slices on public networks.	Predominantly fixed and mobile networks deployed and run by communications service providers.
Private Networks	A network owned and run by, or exclusively for, the owner of the connected devices.	Includes campus area networks, private LTE and 5G networks, many LPWA deployments, and short range/LANs.

Definitions: Geographies

- Our definition of geographies is slightly unusual. It is based predominantly on proximity, but also on two other factors:
  - Uniqueness – How comparable is the economy with those in the region with which it might naturally sit. For instance, European countries are sufficiently similar that we now believe they can be considered as a fairly consistent bloc.
  - Replicability of solutions - the ease of transplanting products and services from one country to another. A successful implementation in a Latin American country, for instance, will be relatively easily replicated in others. The same is true for Europe, North America, MENA and Sub-Saharan Africa. This may not necessarily be the case between, say, Japan and Korea.

Definitions: Geographies

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Definitions: Geographies

Region	Definition	Countries included
Australasia	Australia, New Zealand and Pacific Islands.	Australia, Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, New Zealand, Palau, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu
Europe	All countries west of Russia, including Israel and Turkey.	Albania, Andorra, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kosovo, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Moldova, Monaco, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom
Greater China	Solely China and Taiwan.	China, Taiwan
India and South Asia	India plus surrounding countries.	Bangladesh, Bhutan, India, Maldives, Nepal, Sri Lanka
Japan	Solely Japan.	Japan
Latin America	South and Central America and Caribbean.	Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela
MENA	Middle East and North Africa. Countries in West Asia, and Africa north of the Sahara Desert.	Algeria, Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, Yemen
North America	Solely US and Canada.	Canada, United States of America
Russia & Central Asia	Eurasian countries comprising Russia, Central Asia and other proximate countries.	Afghanistan, Kazakhstan, Kyrgyzstan, Mongolia, North Korea, Russia, Tajikistan, Turkmenistan, Uzbekistan
South East Asia	Asian countries south of China, east of India.	Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Papua New Guinea, Philippines, Singapore, Thailand, Timor-Leste, Vietnam
South Korea	Solely South Korea.	South Korea
Sub-Saharan Africa	All countries in Africa south of the Sahara Desert.	Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Democratic Republic of the, Congo, Republic of the, Cote d'Ivoire, Djibouti, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe

Definitions: Sectors

Sector	Definitions	Sub-sectors
Agriculture, Forestry & Fishing	Industrial Standard Classification (ISIC) code Divisions 01-03. See United Nations 'International Standard Industrial Classification of All Economic Activities' (2008) for more details.	Crop and animal production, hunting and related service activities; Forestry and logging; Fishing and aquaculture
Mining & Quarrying	ISIC code Divisions 05-09.	Extraction of crude petroleum and natural gas; Other mining and quarrying; Mining support service activities
Manufacturing	ISIC code Divisions 10-33.	Manufacture of food products, beverages and tobacco products; Manufacture of textiles, wearing apparel, leather, wood and paper; Manufacture of chemicals and non-metallic mineral products; Manuf. of basic metals and fabricated metal products, except mach. & equip.; Manufacture of electrical equipment and optical products; Manufacture of machinery and equipment n.e.c.; Manufacture of transport equipment; Other manufacturing, repair and installation of machinery and equipment
Electricity, Gas, Steam & A/C	ISIC code Division 35.	Electric power generation, transmission and distribution; Manufacture of gas; distribution of gaseous fuels through mains; Steam and air conditioning supply; Non-Electric/ Gas/ Steam/ Air
Water Supply & Waste Management	ISIC code Divisions 36-39.	Water collection, treatment and supply; Sewerage, waste collection and management services
Construction	ISIC code Divisions 41-43.	Construction of buildings and civil engineering; Specialized construction activities
Retail & Wholesale	ISIC code Divisions 45-47.	Wholesale trade, except of motor vehicles and motorcycles; Retail trade (including wholesale and retail trade and repair of motorcars and motorcycles)
Transportation & Storage	ISIC code Divisions 49-53.	Land transport and transport via pipelines; Water transport; Air transport; Warehousing and support activities for transportation; Postal and courier activities
Accommodation & Food Service	ISIC code Divisions 55 and 56.	Accommodation; Food and beverage service activities
Information & Communication	ISIC code Divisions 58-63.	Publishing, audiovisual and broadcasting activities; Telecommunications; IT and other information services
Finance & Insurance	ISIC code Divisions 64-66.	Financial service activities, except insurance and pension funding; Insurance, reinsurance and pension funding, except compulsory S.S.; Activities auxiliary to financial service and insurance activities
Real Estate	ISIC code Division 68.	Real estate activities
Professional, Scientific & Technical	ISIC code Divisions 69-75.	Legal, accounting, management, architecture, engineering activities; Scientific research and development; Other professional, scientific and technical activities
Administrative	ISIC code Divisions 77-82.	Rental and leasing, employment and travel services; Security, services to buildings and other business support activities
Government	ISIC code Division 84.	Public administration and defence, compulsory social security
Education	ISIC code Division 85.	Education
Health & Social Care	ISIC code Divisions 86-88.	Human health activities; Residential care and social work activities
Arts & Entertainment	ISIC code Divisions 90.93.	Arts, cultural activities, gambling and betting activities; Sports activities and amusement and recreation activities
Other Services	ISIC code Divisions 94-96.	Activities of membership organizations; Repair of computers and personal and household goods; Other personal service activities
Consumer	Connections and spend associated with consumers.	N/A
Cross-vertical	Applications and device types used by enterprises but which are not associated with any specific vertical. For instance, a connected car that is part of a commercial fleet, or an office printer would be include here. They are used by an enterprise, but are not a vertical-specific use cases.	N/A

Definitions: Use Cases

Use Case/Application	Definition & Notes
Machine-to-Person	
Connected Vehicles	Diverse applications including fleet management, usage-based insurance, entertainment, stolen vehicle recovery and navigation provided via aftermarket and factory-fit connectivity. Vast majority focused on road vehicles but also includes air, sea, river and rail vehicles.
eCall	Emergency crash notification service, either via regulatory mandate such as the EU eCall directive, or separately provided. Can be delivered as a service via a dedicated aftermarket device or through the factory-fit connectivity (accessed via the vehicle head unit).
Road Fleet Management	In-vehicle transportation logistics including job allocation, vehicle tracking and vehicle and driver monitoring. Can be delivered as a service via a dedicated aftermarket device or through the factory-fit connectivity (accessed via the vehicle head unit). Includes heavy vehicles such as tractors, combine harvesters, pile drivers, tunnelling machines and cranes.
In-Vehicle Infotainment	Internet access for device tethering and entertainment services such as music streaming. Can be delivered as a service via a dedicated aftermarket device or through the factory-fit connectivity (accessed via the vehicle head unit).
In-Vehicle Navigation	Connected navigation services providing turn-by-turn navigation. Can be delivered as a service via a dedicated aftermarket device or through the factory-fit connectivity (accessed via the vehicle head unit).
Roadside Assistance	Vehicle breakdown recovery provided in conjunction with a roadside assistance provider. Can be delivered as a service via a dedicated aftermarket device or through the factory-fit connectivity (accessed via the vehicle head unit).
Stolen Vehicle Recovery	Tracking solution including recovery. Can be delivered as a service via a dedicated aftermarket device or through the factory-fit connectivity (accessed via the vehicle head unit).
Usage-Based Insurance	Pay-as-you-drive and/or pay-how-you-drive services provided by an insurer. Can be delivered as a service via a dedicated aftermarket device or through the factory-fit connectivity (accessed via the vehicle head unit).
Vehicle Diagnostics	Monitoring of vehicle operation and health. Can be delivered as a service via a dedicated aftermarket OBD2 device or through the factory-fit connectivity (accessed via the vehicle head unit).
Vehicle Head Unit	Embedded factory-fit on-board unit for providing multiple connected car services.
Vehicle Rental, Leasing & Sharing Management	Application installed in vehicles that are provided on short or long-term lease to third parties, for the purposes of tracking and access control. Can be delivered as a service via a dedicated aftermarket device or through the factory-fit connectivity (accessed via the vehicle head unit).
Road Public Transport	Connections to buses, specifically related to their role as public transport vehicles. Excludes infrastructure such as bus stations
Air Transport	Commercial cargo aircraft. Connected passenger aircraft. Excludes infrastructure such as warehousing or airports.
Sea & River Transport	Connected commercial ships/boats, including fishing boats. Connected passenger ferries and similar. Excludes infrastructure such as ports.
Rail Transport	Connected freight railway locomotives and carriages. Connected passenger railway carriages and locomotives. Excludes infrastructure such as railway stations or tracks.
Consumer Internet & Media Devices	Home and personal electronics devices including audio-visual, cameras and watches.
Personal Portable Electronics	Includes headphones, smart watches and consumer cameras.
Smart Home	Includes webcams, baby alarms, home weather stations and diverse other applications. Excludes home automation.
AV Equipment	Includes TVs, projectors, home video, home audio, AV controls, gaming consoles, smart speakers and other consumer equipment plus consumer AV equipment used by businesses.
IT Infrastructure	Routers, modems and other IT infrastructure.
Office Equipment	Connected commercial and consumer devices including printers, scanners, photocopiers, servers, and other specialist equipment.
IT Equipment	Enterprise and consumer printers, scanners, photocopier and storage.
Other Office Equipment	Enterprise-related devices such as franking machines, fax machines and displays.
Payment Terminals	Handling of payments for goods and services on remote devices, including point-of-sale (POS), NFC terminals, pay-stations, ticket machines and vending machines.
ATMs	Automated Teller Machines. Hole-in-the-wall and free-standing cash points, including currency exchange.
Payment Processing	Card payment terminals, checkout machines and parking payment.
Vending Machines	Machines that dispense hot and cold drinks, prepared and semi-prepared food, cigarettes, electronics goods and sundry other items. Also transport ticket machines.
Personal Assistance Robots	Mobile user interface for diverse services including concierge services, telepresence, search (via Natural Language Processing) and personal monitoring.
Personal Monitoring & Tracking	The use of tracking devices applied to a person (or pet) for the purposes of tracking location and/or health metrics.
Child & Pet Tracking	Tracking devices, mostly for children, cats and dogs but also potentially other houseold pets. Typically including GPS location and mobile connectivity.
Security Tracking	Connected devices carried by security guards, prison guards, soldiers and other military personnel, including 'future soldier' equipment and smart guns. Plus offender tagging.
Assisted Living	Trackers, alarms, and comprehensive assisted living solutions.
Healthcare Monitoring	Coronary heart disease, diabetes and pulmonary disease monitoring. Fitness trackers, scales and other non-clinical personal monitoring.
Worker Safety	Fire, police and emergency medical services and general lone worker safety.
Telemedicine	Mobile and fixed location remote telemedicine using dedicated devices.
Portable Information Terminals	Enterprise device, typically tablet format, for providing mobile staff with information and access to back office systems.
White Goods	Connected commercial and consumer devices including refrigerators, freezers, washers, dryers, cooking equipment, and dishwashers, supporting services including warranty management, service-based pricing, remote maintenance and manufacturer performance tracking.

Definitions: Use Cases

Use Case/Application	Definition & Notes
Autonomous Systems	
Asset Tracking & Monitoring	Simple tracking of remote devices, including location and use.
Asset Monitoring	Monitoring of diverse assets including livestock, commercial fitness equipment, ambulance equipment and gaming machines.
Bike Sharing	Bicycles monitored as part of a public bicycle sharing scheme.
Container Tracking	Chilled and dry freight containers.
Loss Prevention	Security monitoring systems found in retail outlets and similar.
Track & Trace	Connecting an asset for the purpose of location monitoring. Includes theft detection and tool location monitoring. All other location tracking not elsewhere covered.
Waste Management	Connected public bins and similar collection facilities.
Autonomous Vehicles	Commercial and consumer autonomous cars, freight vehicles, aerial vehicles,and specialist equipment such as autonomous mining eq uipment and delivery robots.
Autonomous Road Vehicles	Autonomous versions of road and land vehicles. Includes buses, portside automated vehicles/container lifters and mine vehicles.
Drones	Fixed wing and propellor powered unmanned aerial vehicles (UAVs) for consumer or commercial use.
Retail Delivery Robots	Autonomous road (or pavement) vehicles used for delivery of household goods. Covers two sectors: retail and food delivery.
Inventory Management & Monitoring	Remote monitoring of volumes and inventory, for instance of consumables, warehouse stock, or refuse levels.
Precision Specialist Robot	Autonomous precision machinery focused on a diverse range of specific tasks including surgery, house-building, or organ printing.
Remote Diagnostics & Maintenance	Remote monitoring of equipment to spot faults and predict requirements for maintenance. Particularly focused on factory machinery, healthcare devices and vertical transportation.
Remote Process Control	Remote monitoring of equipment to manage the device in the context of a wider business process and to integrate machine data. Focused on agricultural and industrial processes.
Real World 'Visualisation'	Use of headsets and similar devices to provide augmented or virtual reality support for a field of factory process.
Connected Glasses	Use of headsets and similar devices to provide augmented or virtual reality support for a field of factory process.
Smart Grid	Management of infrastructure related to electricity, gas and water production, distribution and consumption. Includes end points such as smart meters and electric vehicle charging points. In the context of electricity distribution this particularly relates to the management of the relationship between the various elements (i.e. as a Virtual Power Plant).
Generation	Machinery within the power plant and alternative sources.
Grid Operations	Includes transmission towers, distribution networks, pipelines, waste water and remote process control.
Electric Vehicle Charging	Public roadside (or similar) infrastructure for charging electric vehicles. Domestic equivalents are not included here.
Electricity Smart Meters	Any form of connected meter for the purpose of performing automated meter reading (AMR) or the provision of more advanced services.
Gas Smart Meters	Any form of connected meter for the purpose of performing automated meter reading (AMR) or the provision of more advanced services.
Water Smart Meters	Any form of connected meter for the purpose of performing automated meter reading (AMR) or the provision of more advanced services.

Definitions: Use Cases

Use Case/Application	Definition & Notes
Smart Environment	
Access Control & Intercoms	Access control systems, such as control barriers on commercial premises, private homes and public spaces. Includes prisons and border control.
Building Automation	Control system installed in buildings to control electrical and mechanical infrastructure within the building.
CCTV	Video-based monitoring of commercial premises, private homes and public spaces.
Environmental Monitoring	Use of sensors to monitor environmental metrics such as temperature, CO2, and noise
Agriculture	Monitoring of crops and agricutural land for soil condition and local environmental monitoring.
Environment Monitoring	Monitoring of external environment and of pollutants from industrial processes.
Infrastructure Monitoring	Includes road, and rail infrastructure, dams (including hydroelectric and tailing), levees, reservoirs, weirs, and pipelines. During construction projects counts as construction, government at point of handover.
HVAC	Heating, ventilation and air-conditioning systems and their remote and/or automatic control.
Lighting	Remotely managed commercial and residential building lighting systems, and public lighting.
Building Lighting	Lighting within buildings, including large buildings such a stadia and railway stations.
Public Space Lighting	Streetlighting and other public spaces.
Parking Space Monitoring	Remote monitoring of parking spaces to provide users and owners with information on occupancy and availability.
Public Information & Advertising Screens	Remotely updated billboards and public information screens, including public transport.
Road Infrastructure Monitoring & Control	Diverse services associated with road infrastructure including road condition monitoring, congestion charging, road tolls, traffic volume monitoring, road signs, traffic lights, enforcement cameras.
Road Traffic Control	Road pricing infrastructure and in-vehicle devices for road tolls and other congestion charging schemes, road signs and traffic lights.
Road Traffic Monitoring	Roadside infrastructure for monitoring traffic volumes and cameras, typically with ANPR, to ensure compliance.
Security & Fire Alarms	Security and fire alarm systems, including sensors and management, on commercial premises, private homes and public spaces.