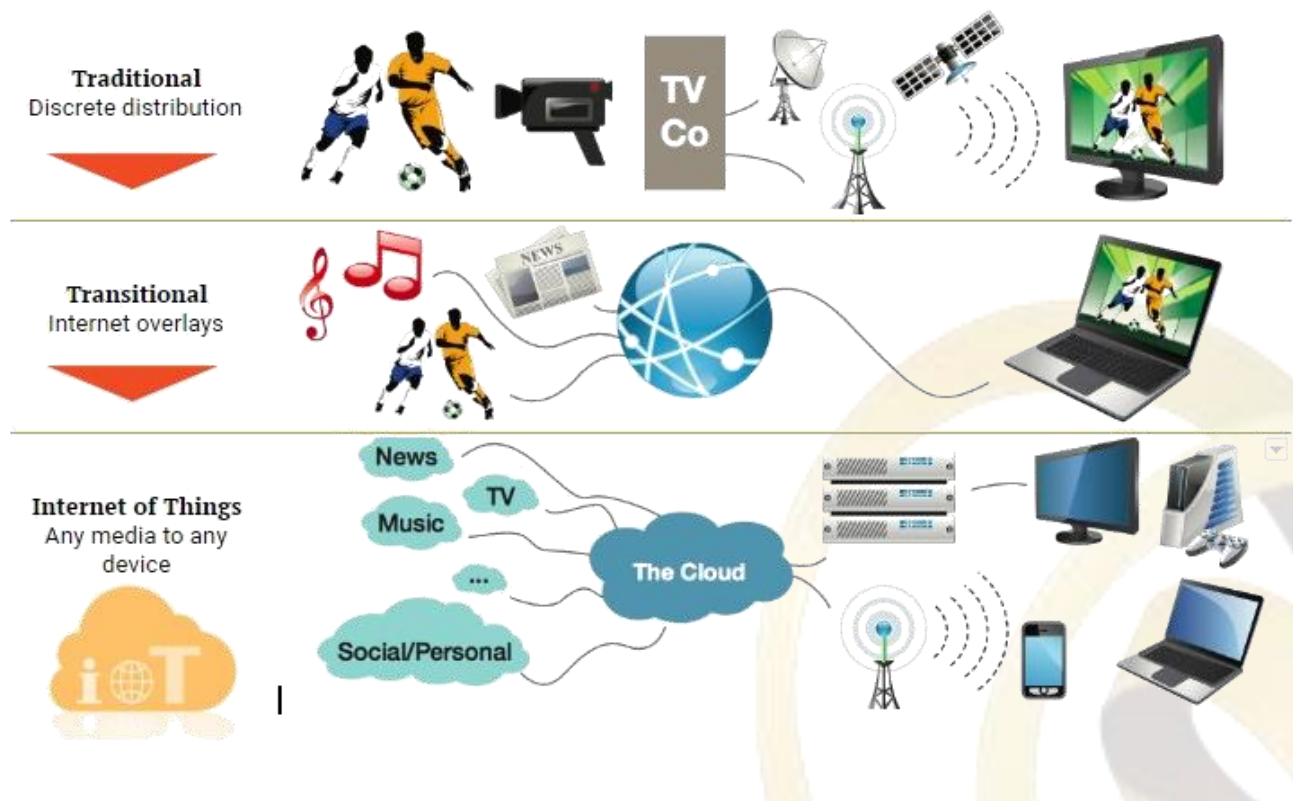


Impact of IoT on Family Offices, Investments into IoT companies and a Snapshot of the Australia-India IoT space

For a long period of time the internet has been the median for search, transfer and exchange of data, disrupting communication channels such as phone, fax and mail. Then came the age of analytics with high-tech platforms, systems and processors. Now with the evolution of smart technologies, internet has become the core of everything. We are now at the era powered by quantum computing, blockchain and artificial intelligence.

'Internet of Things' (IoT), the network of physical objects embedded with software and sensors that are connected to collect and exchange data, is no longer the future, it is now permeating everywhere.



Impact of IoT on Family Offices

IoT will impact family offices and the wealth management industry, as they are naturally seen as the early adopters of technology. Advisers working with wealthy clients can expect data

from sensors that may be attached to physical assets. Smart devices, wearables and AI (artificial intelligence) will also play a major role in the shift from private to intelligent advise, and this may not necessarily be totally artificial.

IoT is driving the idea of shareable assets and real-time market places, which is a growing threat to banks' lending books. Clearly, the business case for sharing assets is very strong, that banks' specialist asset lending businesses are under the most threat. There is some good news for banks in that a marketplace will improve loan quality, since a highly utilised asset will produce a very consistent cash flow. A digitally-connected asset is for all intents and purposes a secured asset. You can finance the asset, you can easily understand its value, and the odds of the loan being repaid are higher.

Why Family Offices are backing IoT companies in Australia

Australia is leading the way, having brought Wifi to the world, and the national broadband network (NBN) is the largest investment in the world relative to its GDP and population. The project is unique in not involving any private sector funding, at least for its first decade, connecting 93% of residential premises and broadband wireless and satellite coverage to the remaining 7% of the Australian population.

LoRaWAN (MAC protocol for a high capacity Long Range and Low Power Wide Area Networks) targets the basic needs of IoT such as secure bidirectional communication, mobility and localisation services. Australia has recently started deploying IoT LoRaWAN network at Launceston (Tasmania), Townsville (Queensland), Docklands (Victoria), Burangaroo (NSW); to enable a host of smart, innovative applications involving real-time transportation monitoring, inventory control, healthcare, agriculture and many other IoT applications.

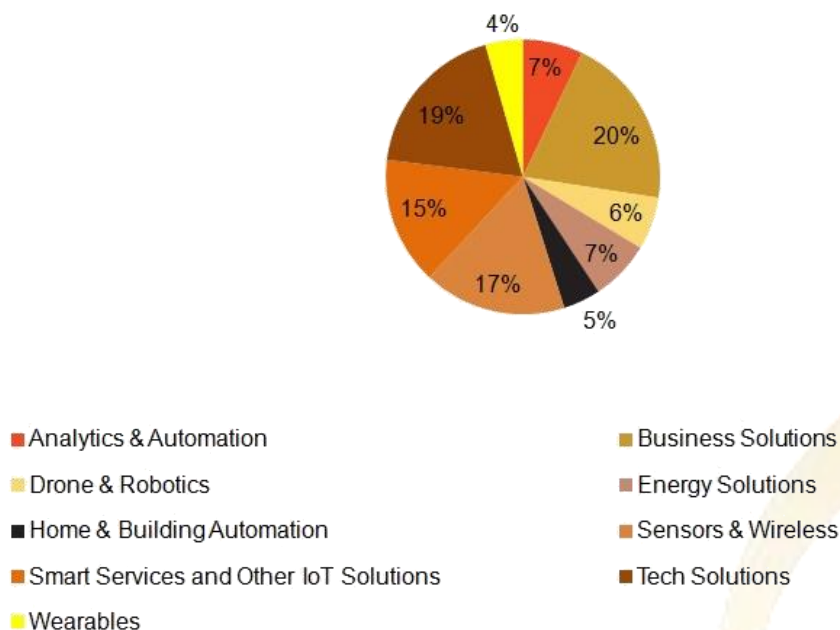
These recent ground-breaking projects will place Australia amongst forward-thinking countries developing smart network infrastructures based on the LoRa Technology to help streamline day-to-day processes and elevate business decisions, environmental conservation, public infrastructure, and more. For example, National Narrowband Network Company (NNN Co) is rolling out its own low power wide area network for IoT based on the LoRaWAN technology – is calling on the Government to spend \$800m to build a LoRaWAN network covering 2.5m square kilometres to support IoT applications for Australian agriculture.

There has been recent the trend of technology companies collaborating with Australian universities on IoT initiatives and connectivity:

- **Nokia** and UTS will establish a collaborative innovation and training facility at the university, where the technology company will provide IP routing, optical, fixed and 4G/5G mobile network components, and applications and analytics platforms for project work and training.

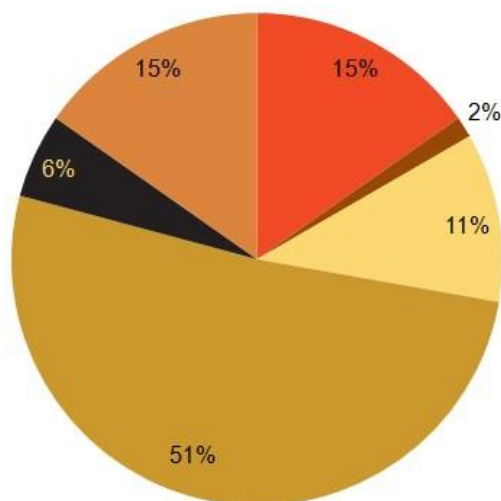
- UTS has also partnered with local IoT network operator **Thinextra**, with the company providing the university with free access to the Sigfox network as part of its Smart University Partnership Program.
- **Huawei** recently launched a Narrowband-IoT training facility at James Cook University in Cairns, providing the funding and infrastructure required to encourage students to build solutions using the standard as part of the university's new Bachelor of Engineering in Electronic Systems and the Internet of Things degree.
- Australian tech company **Meshed** launched its Sydney CBD LoRaWAN network in partnership with UTS, The Things Network and the IoT Alliance Australia, providing students and surrounding businesses to develop IoT solutions with the crowd-sourced standard.

Even though video analytics has been highlighted as the booming area of focus in the IoT, Tat Capital research shows that generic sectors such as drone, robotics, business solutions, smart services, energy, sensors and wearables are main areas, where IoT companies are starting to evolve in Australia.



Family Office investments into IoT companies in Australia

Tat Capital research shows that approximately 70% of the IoT companies in Australia have launched within the past 10 years, which is consistent with the interest from Australian family offices to invest into the IoT space.



■ Until 2000 ■ 2001-2005 ■ 2006-2010 ■ 2011-2015 ■ 2016- ■ NA

By 2025, data from connected devices are projected to yield insights, driving potential economic value as much as US\$11 trillion (McKinsey - June 2015). Global video analytics market segment is expected to be US\$2 billion in 2017 (Tractica – Statista 2017). Video-analytics applications are expected to have a compound annual growth rate of greater than 50 percent over the next five years (McKinsey & Company – December 2016).

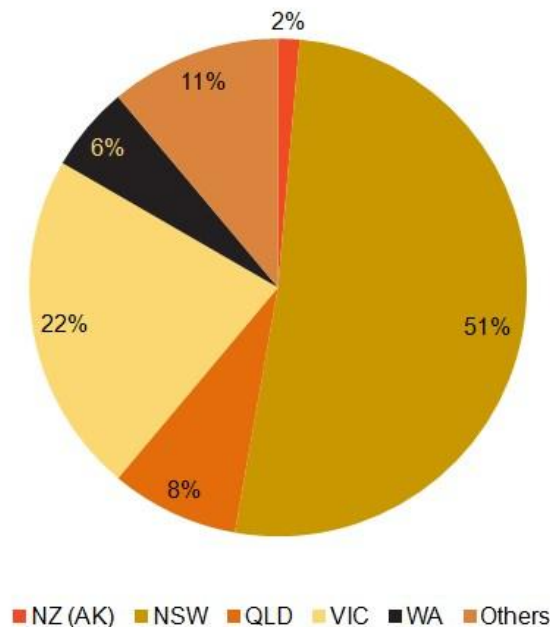
In the intelligent transportation space - **DTI Group** (ASX: DTI) founded in Perth, **SpeedCast** (ASX:SDA) founded in Adelaide, and **Smart Parking** (ASX: SPZ) founded in Melbourne have been around for over 20 years. In 2010, an Australian family office backed a 10-year-old private company, headquartered in Melbourne - **SenSen Networks**, which provides patented video IoT analytics and sensor data-driven AI solutions to global blue-chip customers, across intelligent transportation solutions and gaming.

In the sporting arena - **Catapult Sports** (ASX: CAT) founded in Melbourne has had strong family office and institutional support on the listed markets. **CricHQ**, NZ based private company was backed by Australian, NZ and UK based HNW investors, and in 2015 it received US\$10 million PE investment from Tembusu partners, backed by Indian family offices and the investment was facilitated by Tat Capital. Sportstec founded in Sydney, was acquired in 2015 by Agile Sports Technologies and now operates as **Hudl**.

In the construction and building maintenance space: Adelaide-based technology and software company **Sine**, which provides check-in system used for office meetings, schools, hotels, construction sites and events, has also been backed by an Australian family office in 2016. There's also **Buddy** (ASX:BUD), which was founded by an Australian entrepreneur, now based out of Seattle and they operate out of Adelaide. Buddy provides a monitoring solution comprised of IoT class hardware, secure and scalable data infrastructure, an operations portal, engaging occupant facing dashboards, and on-the-go mobile experiences. Another interesting

company backed by a family office is **Advanced Navigation** based in Sydney, which specialises in the development of navigation technologies and robotics.

Even though, most examples above backed by family offices are out of South Australia, WA and New Zealand; Tat Capital research shows New South Wales (51%) spearheading the IoT space in Australia, followed by Victoria (22%).



The research conducted in March 2017, covered the full range of IoT companies in Australia. The majority of the companies seem to be involved in smart services and providing software solutions in the IoT space in Australia. Specific IoT companies providing business solutions specific industries such as health, agriculture, dairy, retail and gaming are gaining traction.

1	S-A SenseAgent	2	A-S Ascendix
3	Stc Semtechcorp	4	AEI AueEasi
11	vw velvet wlt	12	dv drome vlg
19	fe finley	20	HbT Higgins-TB
37	hu hive uar	38	IsL Infra Logic
55	InW InstrumentWorks	56	IzG IoTZoneGLYN
87	I Iridium	88	MM Morris Micro
<div>Company # → Co symbol → Company name →</div> <div>Smart services and Other IoT Solutions Analytics, Automation and Wearables Sensors, AR/VR, Wireless, Robotics Investors Energy Solutions</div> <div>Hardware/Software and Tech Sol. Business Solutions (Industry, Health, Agriculture, Dairy, etc)</div>			
29	BI Blue IoT		
21	5S 500 Startups	22	1X 10Xinvestor
23	FHS ForsterHelmet	24	Io Inamo
25	APL Agensens	26	a8 agnov8
27	Bm Biomimix	28	CG Creator Global
29	BI Blue IoT	30	ct carbon track
39	AC AngelCube	40	CS Catapult Sports
41	md moving data	42	Mus Movus
43	dn daintreanetworks	44	e-h ehat
45	fn fad nexus	46	fb farm bot
47	e-d eddy	48	LIF LIFX
71	BVJ Blackbird Vert	72	D6C Dustin (D6C)
73	PE Pooled Energy	74	SW SmartWearables
75	ip Iridio plan	76	IL Infouch Living
77	LG LX Group	78	mw mcare watch
79	Mc Moore's cloud	80	SA Safon Automation
103	SC Sengeda Capital	104	ev emotiv
105	WE Wearable Exp.	106	WI Worktile
107	Ob Observant	108	Ov Oxus
109	S2 Systems 22	110	ty the yield
111	ww watt watchers	112	Wc Watford
5	Bud Budy	6	pxr picure
7	cx connexion	8	Cr Creation
9	dk digital keys	10	DTI DTI
13	E ELANATION	14	GF GoFar
15	gm geo moby	16	H-b Hometoy
17	Hb Humbugzz	18	lc Includix
31	IG IoT Group	32	ji jack.io
33	Kn Kobahnet	34	lux leuax
35	msd meshed	36	ni newit
49	WT Wait Tech	50	NNN NNNco
51	NI Nube IoT	52	oom oom
53	Px Proxima	54	PTC PTC
81	W WireTech	82	NB Niga Bioxio
83	QT Quintity Tech	84	sm Swing Mach
85	SFX SOFPOX	86	S-s Smartford
113	YPB YPB	114	s-c spaceconnect
115	SX SpaceX	116	Tm Tagli media
117	VT Vir Technology	118	xp xp
57	Mr Myrica	58	Ncw NacomNetworks
59	pr propeller	60	ref renewable flyng wlt
61	sb skyborne	62	SP Smart Parking
63	CDN CDN Software Ltd	64	e-i easychoice
65	EES Easynet Supply	66	Ed Envdata
67	E3 Eora 3D	68	fa fucos australia
69	FI Freestyle IoT	70	I6N IP6Now
89	ss smart sensor	90	sf swarm farm
91	an Adv. Navigation	92	TaV Telstra Ventures
93	TSC Thales/Compass	94	Txt Thindra
95	KT Keysight Tech	96	LDK LEAPIN Dig Keys
97	M2C M2MConnectivity	98	Ms Mulesoft
99	R Reelish	100	S2G SecuredGo
101	SG Sky Grid	102	SI Swift inc.

Australia-India IoT Space

There has been some interesting IoT innovations and collaborations in Australia & India in the recent past:

- ASX listed **CCP Technologies** (ASX:CT1) adapted **Thinxtra's** Australian Sigfox network for monitoring its commercial refrigeration systems. CCP's cloud-based analytics platform provided the business intelligence required to manage food safety and compliance standards and improve business efficiency.
- Agnov8**, an agricultural innovator, through its two Smart Water sensors, helped **Cameron's Nursery** become more profitable by monitoring the quantitative aspects of the nursery's water.
- Jain Irrigation**, an Indian multinational, invested in an Australian irrigation agtech company **Observant Technology**, and this collaboration of technology and innovation will aim to increase crop yields while sustainably and profitably managing water.

Here are some global examples:

- Tata Consultancy Services (TCS)** IoT Centre of Excellence in Hyderabad - South India, **HCL Technologies** collaboration with **IBM** to design applications for remote monitoring, smart inventory management and smart buildings.
- Tech Mahindra's** partnership with Silicon Valley-based **Aeris Communications** and Dutch company, **Tomtom**.

Australia

Australian IoT market is currently at about \$383 million in 2016, and is expected to grow into a \$4 billion industry by 2020. (Australian consumer insights service Telsyte)

Internet data consumption in Australia increased by an incredible 45 percent between 2015 and 2016, and this trajectory is expected to continue its exponential rise. In fact, a forecast from Cisco claims that the amount of data we use in 2018 will be more than the amount we used "in all the years before 2013 combined".

Cisco also claims that by 2020, there will be two million internet households in Australia using more than 250 gigabytes (GB) per month, and over 500,000 households using over 500 GB per month. With access to fast internet over the nbn™ network, Australians will be IoT-enabled.

India

IoT market in India is at \$5.6 billion in 2016, and is expected to reach \$15 billion with 2.7 billion units by 2020. (NASSCOM/Deloitte report)

According to a latest report published by Nasscom in 2016, The total Internet usage in India is set to see a two fold increase from 350 million users at the end of 2015 to 730 million by 2020.

Data traffic per active smartphone is expected to increase fivefold from 1.4 GigaByte (GB) per month in 2015 to 7 Gb per month in 2021.

Australian & Indian IoT Company research - conducted by Tat Capital (March 2017)

Overview of Indian IoT space by Companies, Location, Launch & Sector Spread is given below:

Y

Yulbox

3

ASP

on Systems Pvt.

4

A-E

Algo Engines

11

IGT

Technologies P

12

Zt

Zerobix

19

fr

frinobots

20

T

ThingsCloud

37

iB

ibot

38

PI

Plugg Labs

55

Vs

Volansys

56

SB-

Sungreen Tec

87

P

Protek

88

Fg

Fugen

29

SAI

Sas Information T

Smart services and Other IoT Solutions

Analytics, Automation and Wearables

Hardware/Software and Tech Sol.

Sensors, AR/VR, Wireless, Robotics

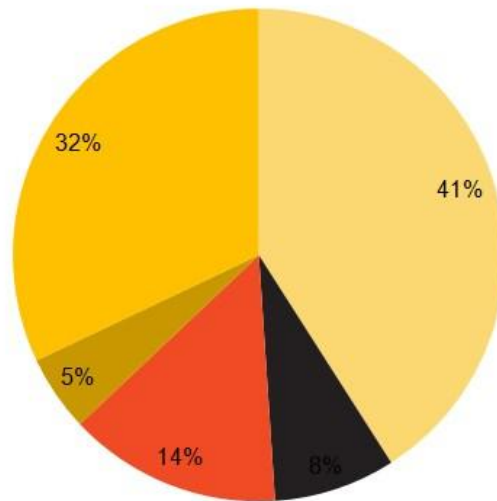
Business Solutions (Industry, Health, Agriculture, Dairy, etc)

Energy Solutions Investors

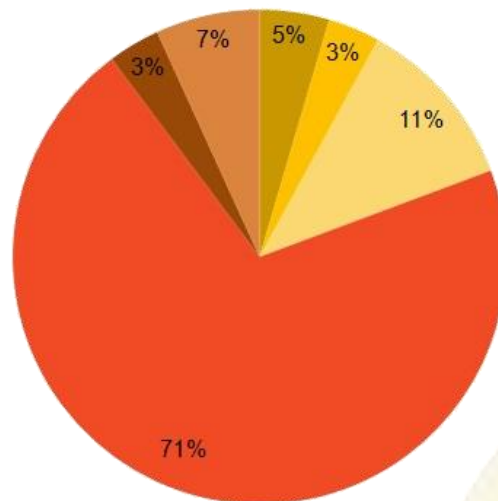
21	Ww	Lc	75	Ax	NW	C	CC	28	AS	SAI	Ss							
	Wtworks	Lechal	75F	Axelta	NeedWee	CarIQ	CloseConnection	Altizon Systems	as Information T	Sas Information T	Shopsense							
39	ExT	SG	41	E	42	CL	43	CnT	44	LM	45	Ce	46	MP	47	ETP	48	sb
	Exvoiz Tech	SenseGiz	EcoAes	CL	Cubical Labs	CnT	CanotTech	LM	LighMetrics	Ce	Coey	MP	Machine Pulse S Technologies	ETP	ETP Technologies	sb	sraptozz	
71	pi on-Bunder Bi	72	Bst	ESW	73	Ks	74	TE	75	GRM	76	P-S	77	TG	78	DI	79	80
	Bolt sports tech	Bst	entechShopWork	ESW	Klar systems	TE	Type Express	GRM	GrobMac	P-S	PlaySolar	TG	TempoGo	DI	Discover Ideas	Tk	TouchMin	
103	gja, Ramer Jaku	104	ArW	105	S	106	IT	107	TnT	108	VTP	109	Sa	110	D	111	MT	112
	AdorfitWearable	ArW	AdorfitWearable	S	Sataram	IT	gs - Falconcons	TnT	Triak n Tell	VTP	Vindologie Pvt Ltd	Sa	Stealapps	D	Dubelo	MT	Mno Technology	OD

5	Lo	6	CT	7	tP	8	U	9	LQ	10	Au
	Locarte	olutions Techno	taphn	Uniphore	LINGS	Ailux					
13	UcV	14	UI	15	RHL	16		17	Ir	18	AEI
	Uncanny Vision	Unimel	umanLogiTech	Mamlyu	Inventrom	aterau Electro					
31	TZ	32	Sp	33	NI	34	TW	35	R	36	GSC
	TherisaZone	Span (Euy)	NEXOT	Twelve	Roambee	Gata Smart Cite					
49	MMC	50	N5	51	ET	52	SM	53	Srth	54	eCT
	mer electronics (Native5	T Technologies	VR Manager	Smartphones	er Technologies					
81	MSy	82	Tr	83	Vm	84	ST	85	dm	86	ae
	MaverSystems	Transrot	Vimokulu	Sterea Tech	dmale by mupm	afterenergy					
113	S-A	114	Sr	115	C-M	116	BEB	117	C-T	118	AMH
	SolutionAnalysis	Smartson	connected	ed Evolution Tis	Connective Tech	Business HAZZ					

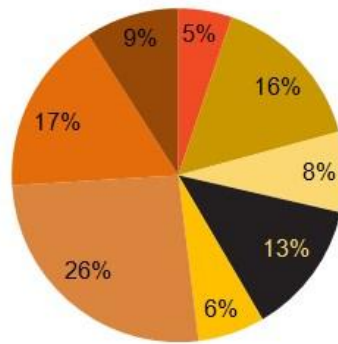
57	58	59	60	61	62	63	64	65	66	67	68	69	70
Keyur Patel	Oxof Ventures	Nitesh Jan	P39 Capital	pi Ventures	Reflexco	Sachin Tendulkar	Tandon and Ka	Sangay Menta	on and DG Ver on Oloo and G	Segunda Capital	Tiger global	Times Internet	
89	90	91	92	93	94	95	96	97	98	99	100	101	102
Ira India Venture he Ventures (Pv	ekom Strategic	Treble Venture	Tiptart founder	Hero motor corp	India Quotient	Investopad	yCamp Ventures	Jungle Ventures	K3Capital	Kakut Cap	Chairman of Biconductor Ven		



■ Bangalore ■ Pune ■ Mumbai ■ Delhi ■ Others



■ Until 2000 ■ 2001-2005 ■ 2006-2010 ■ 2011-2015 ■ 2016- ■ NA



■ Analytics & Automation

■ Energy Solutions

■ Wearables

■ Tech Solutions

■ Business Solutions

■ Sensors & Wireless

■ Smart Services and Other IoT Solutions

■ Home and Building Automation