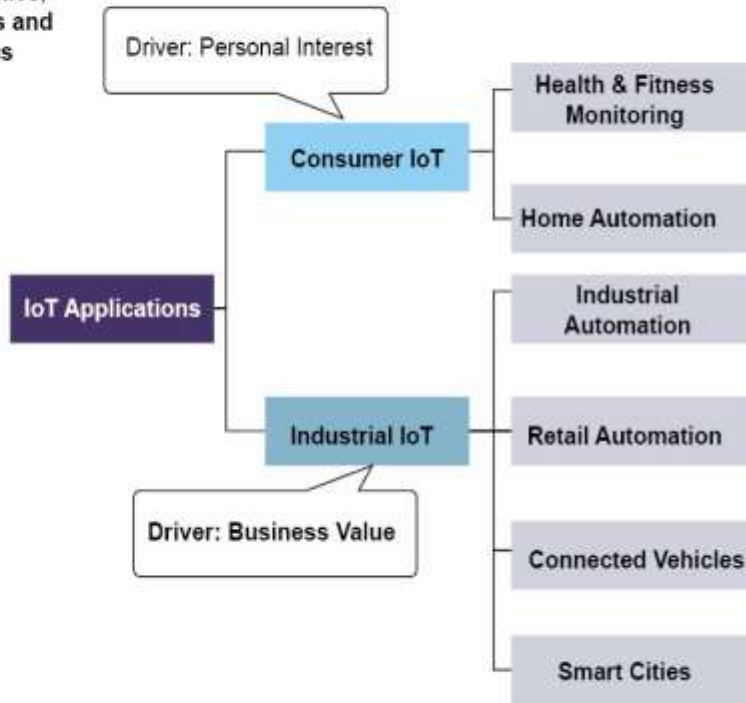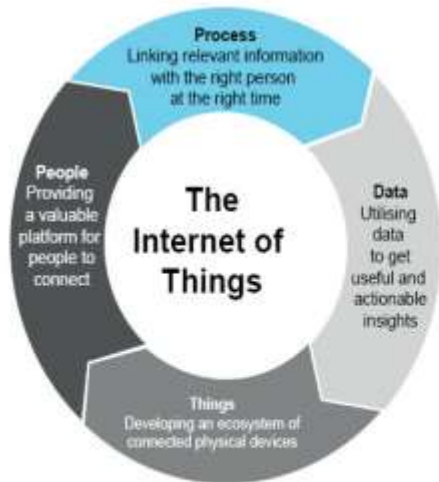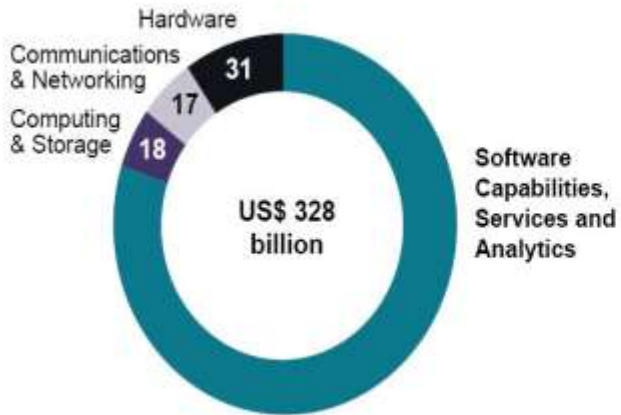# IoT Landscape: Context

India Global IoT brand Panel

Dec 2nd 2019
Bangalore

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IoT opportunity for technology and service providers-2020 in US$ billion

Hardware — 31
Communications & Networking — 17
Computing & Storage — 18

US$ 328 billion

Software Capabilities, Services and Analytics

The Internet of Things

Process — Linking relevant information with the right person at the right time

People — Providing a valuable platform for people to connect

Data — Utilising data to get useful and actionable insights

Things — Developing an ecosystem of connected physical devices

Driver: Personal Interest

Consumer IoT
- Health & Fitness Monitoring
- Home Automation

IoT Applications

Industrial IoT
- Industrial Automation
- Retail Automation
- Connected Vehicles
- Smart Cities

Driver: Business Value

IoT provides a unique connectivity that enables businesses to turn data into actionable insights

Source: Deloitte Analysis, Gartner, Technavi, Arc Advisory Group

Estimates of India IoT Size in USD
Listed by Year when estimate was made. All estimates were normalized for end 2020. *Estimates vary based on scope [Connectivity provision and managament is Telco or M2M revenue] and new (IoT) or older (SCADA) also.*

2014
   TiE IoTForum panel estimates 10-12 Billion. Estimates 2013 size to be 2.5 Billion.
2016
   Nasscom estimates 15 Billion by 2020 at 5% of Global market. Estimates early 2016 size to be 5.3 Billion.
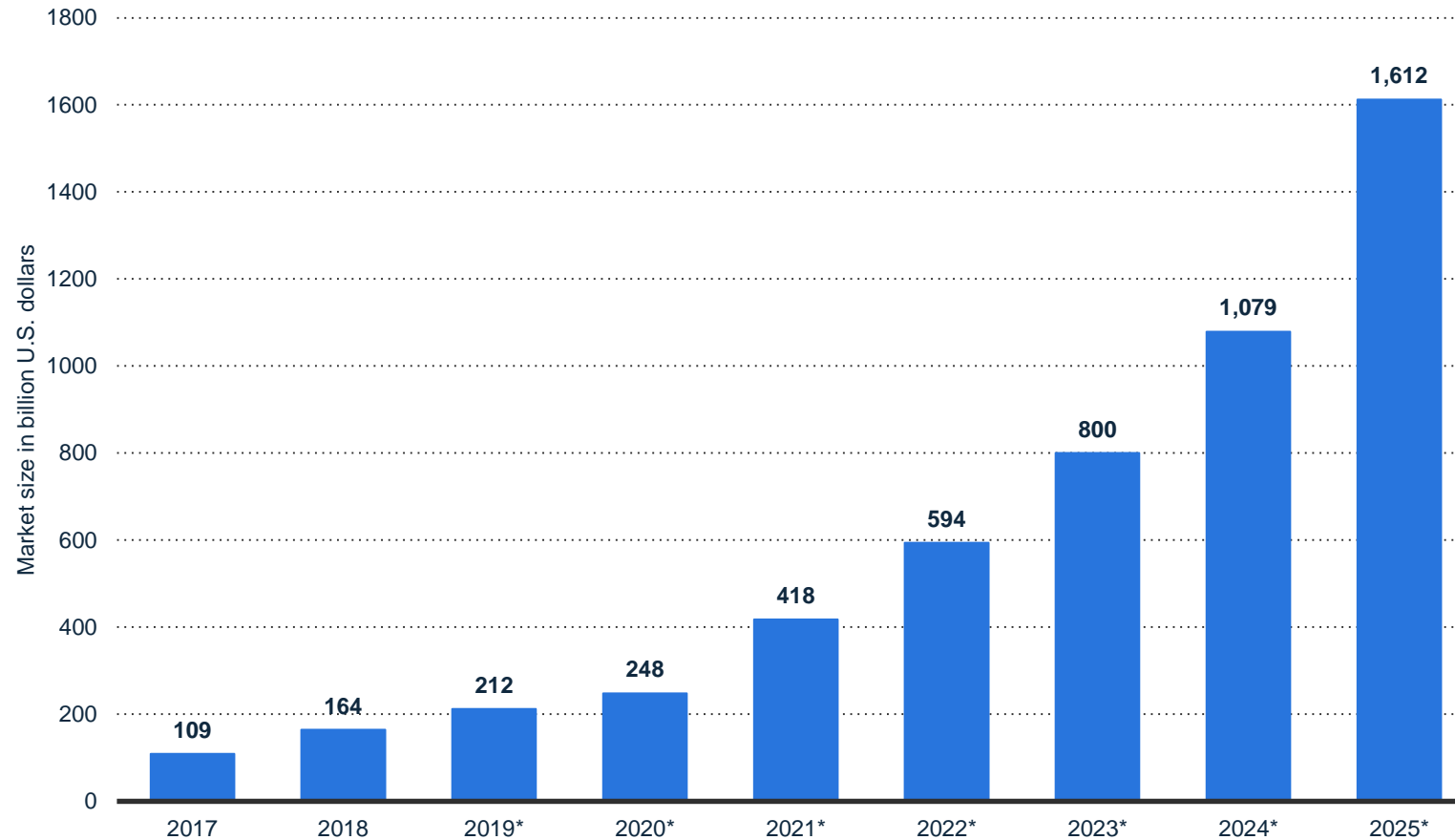   **6Wresearch** projects 28% CAGR till 2022 and 15 Billion + size for 2020
2017
   Deloitte estimates 1.3 Billion in 2016 and predicts 8 Billion by 2020 .

   http://www.iotforindia.org/wiki/Indian_IoT_Market

IESA — INDIA ELECTRONICS & SEMICONDUCTOR ASSOCIATION — Taking India to ESDM Leadership

TiE BANGALORE — FOSTERING ENTREPRENEURSHIP

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Size of the Internet of Things (IoT) market worldwide from 2017 to 2025 (in billion U.S. dollars)
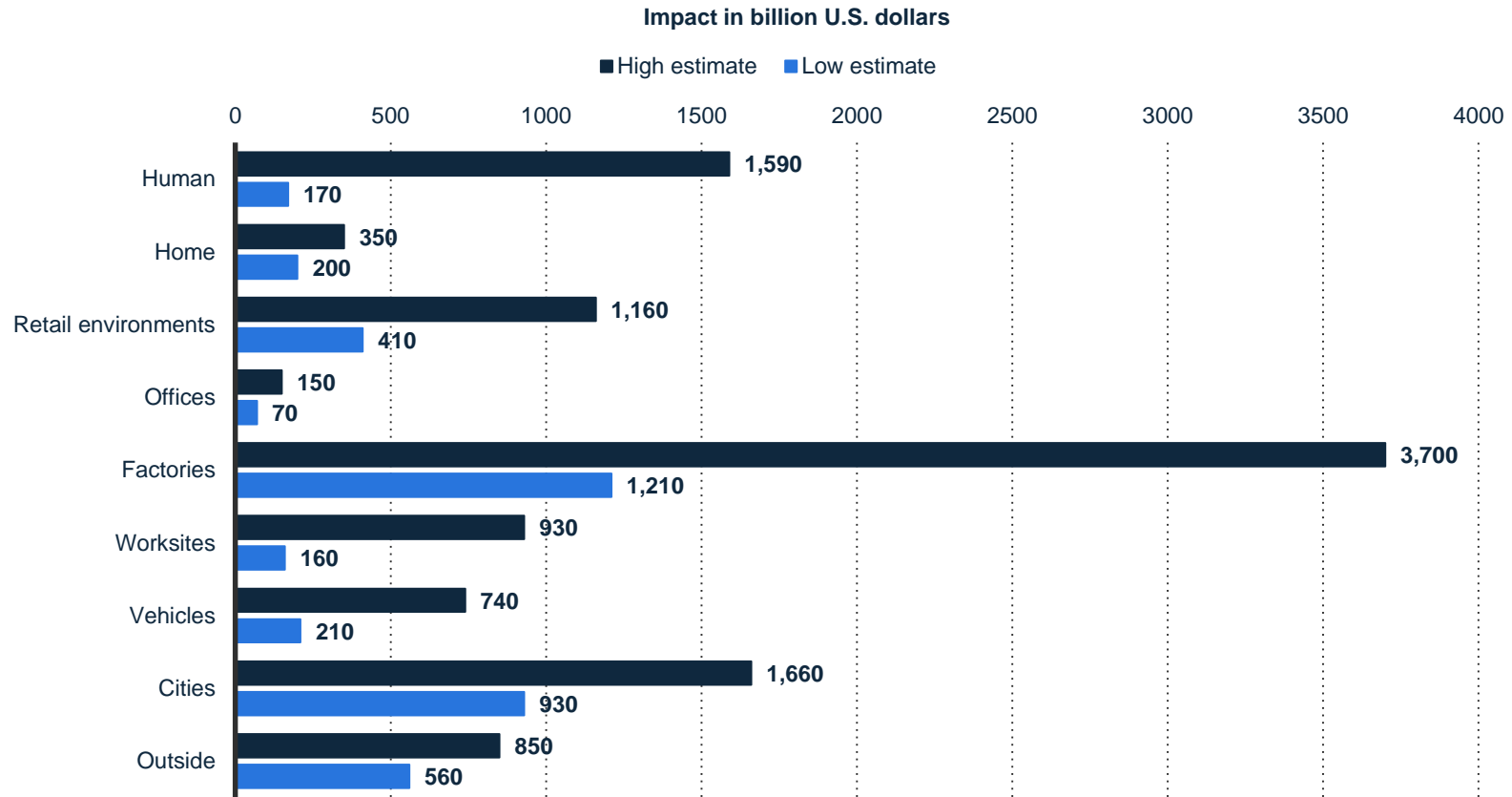
Global IoT market size 2017-2025

Note: Worldwide; 2017 to 2018

Further information regarding this statistic can be found on page 54.
Source(s): Finch Capital; IoT Analytics; Statista estimates; ID 976313

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Market size

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Forecast economic impact of the Internet of Things (IoT) in 2025 (in billion U.S. dollars)

IoT economic impact forecast 2025, by sector

Impact in billion U.S. dollars

■ High estimate ■ Low estimate

Sector	High estimate	Low estimate
Human	1,590	170
Home	350	200
Retail environments	1,160	410
Offices	150	70
Factories	3,700	1,210
Worksites	930	160
Vehicles	740	210
Cities	1,660	930
Outside	850	560

Note: Worldwide; 2015

Further information regarding this statistic can be found on page 61.
Source(s): McKinsey; ID 580778

Market size

IoTNEXT™
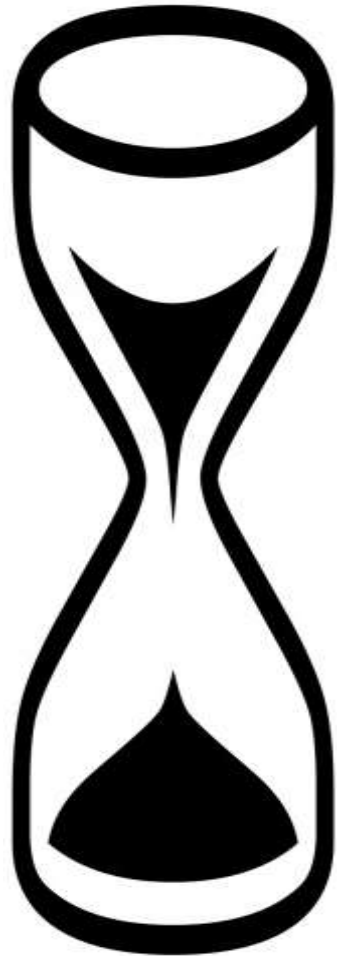
IoT Research Blogs

- **Machina Resarch: coined the Low Power Wide Area LPWAN terminology. Now part of Gartner**

- **Berg Insight: dedicated M2M/IoT market research firm based in Sweden since 2004**

- **Harbor Research : Growth strategy . First firm to focus on Smart things IoT to be.**

- **Beecham Research : IOT & M2M marketspace. IoT Pilot online tool to match adopter needs with IoT platform capabilities.**

- **MachNations: Internet of Things (IoT) middleware, platforms, applications and services**

- **Momenta Partners: Deep Industry Practitioners in Digital Energy, Manufacturing, Smart Spaces and Supply Chain**

- **IoT Council: Think tank focused on the Internet of Things with information on events, IoT news and policies.**

- **Postscapes: An excellent website for all things IoT.**

- **IOT Institute: Think tank focused on the Internet of Things with information on events, IoT news and policies**

- **Hackster.io: A community dedicated to learning hardware, from beginner to pro.**

- **IoTForum: Raising the IoT quotient of India**

- IoT Show by Sudha Jamthe Interviews with folks all over the world on IoT in their country

- The Internet of Things IoT Inc Business Channel on You Tube

http://www.iotforindia.org/wiki/List_of_IoT_Blogs_to_follow

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Sensor to the Cloud - The IoT Stack!

Touch Points & Interfaces — WEB/HTTPS. APIs. SMS. IVR, E-mail, Twitter

Analytics — All kind of Big Data Analytics for different Verticals & Different Applications

Applications — End Users, City managers, System admin, Grid Managers, traffic Managers

IoT Platform — Kaa, Axeda, SmartThings,Plat.One,Helium Plaform.io, WebNMS

Gateway — SmartPhone, Street Pole Router LORA Gateway etc.

Connectivity — BLE, WiFi, HART, CANBUS, Zigbee, MBAN, SubGhz Zigbee, WiSun, Wireless MBUS, 6LowPAN, LPWAN – LORA< NB-IoT, 3G/4G
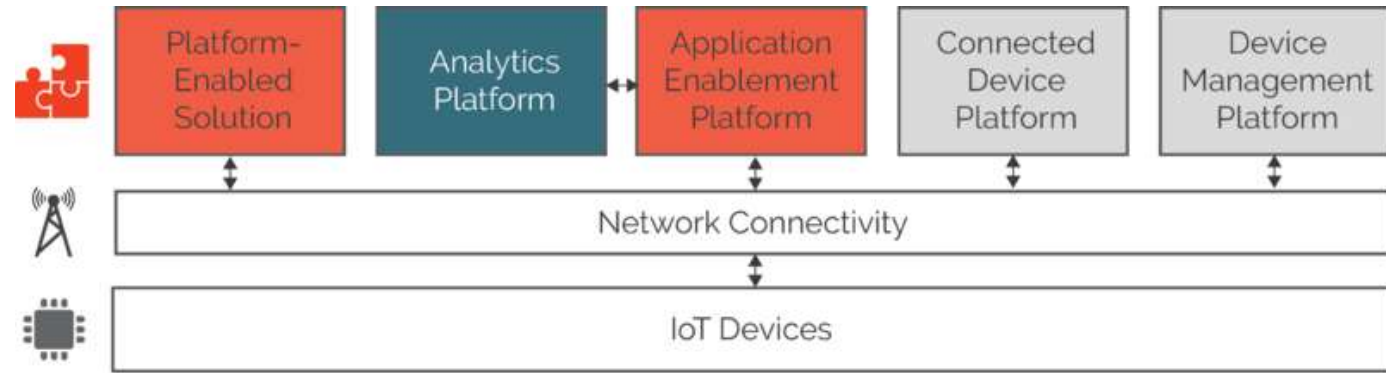
Sensor Nodes — Temp, Motion, Vital Signs, Energy, Pressure, Humidity, Optical, Image, Gas, Water Etc.

ISO/IEC 30141:2018 Internet of Things (IoT) — Reference Architecture

http://www.iotforindia.org/wiki/Architecture

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IoTPlatforms

- Nokia Impact platform

- IoT Directory

- IDC IoT Taxonomy Map

- IoT Landscape Chart First Mark Capital's Matt Turck

- list-of-360-iot-platform-companies

- Charalampos Doukas - Internet of Things – List of Platforms

- Gartner - Market Guide for IoT Platforms -- Representative IoT Platform Vendors

- IoT Analytics - List of 260+ IoT platform companies

- Liota from VmWare

- **Kaa, PTC, GE PREDIX, Siemens Mindsphere …**
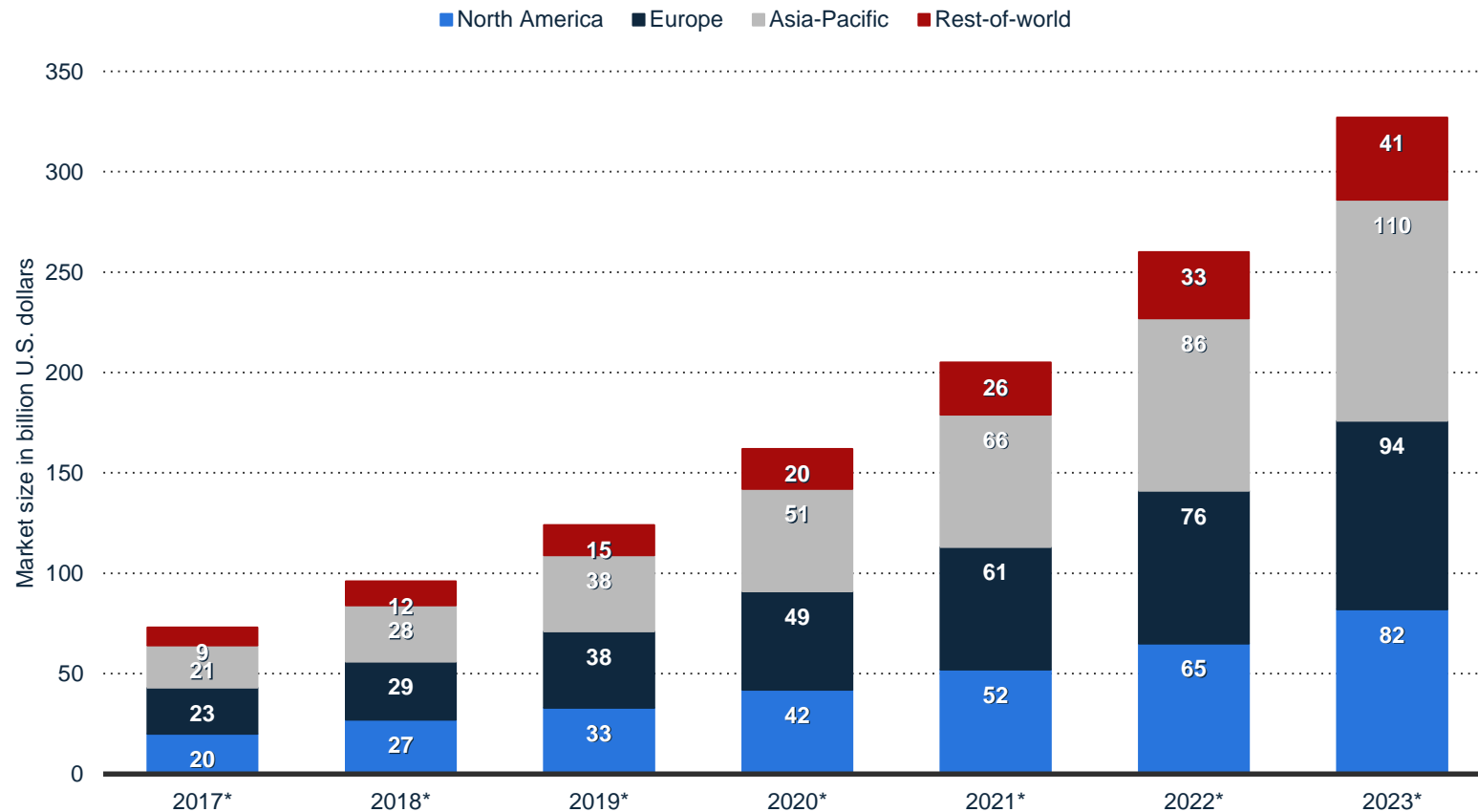
http://www.iotforindia.org/wiki/IoTPlatform

©2016 MachNation

Global smart systems, services and IoT platform market size from 2017 to 2023, by region (in billion U.S. dollars)

Smart systems, services and IoT platform market worldwide by region 2017-2023

Legend: ■ North America ■ Europe ■ Asia-Pacific ■ Rest-of-world

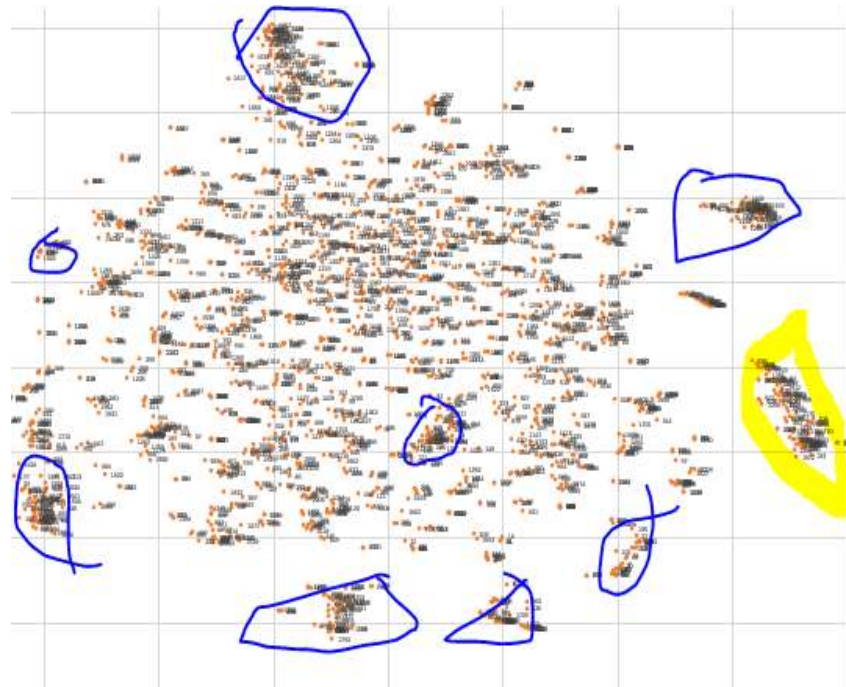| Year	North America	Europe	Asia-Pacific	Rest-of-world
2017*	20	23	21	9
2018*	27	29	28	12
2019*	33	38	38	15
2020*	42	49	51	20
2021*	52	61	66	26
2022*	65	76	86	33
2023*	82	94	110	41

Note: Worldwide; 2017

Further information regarding this statistic can be found on page 60.

Source(s): Harbor Research; Statista estimates; ID 805061

IoT is vast, a horizontal and happening. Decade long journey
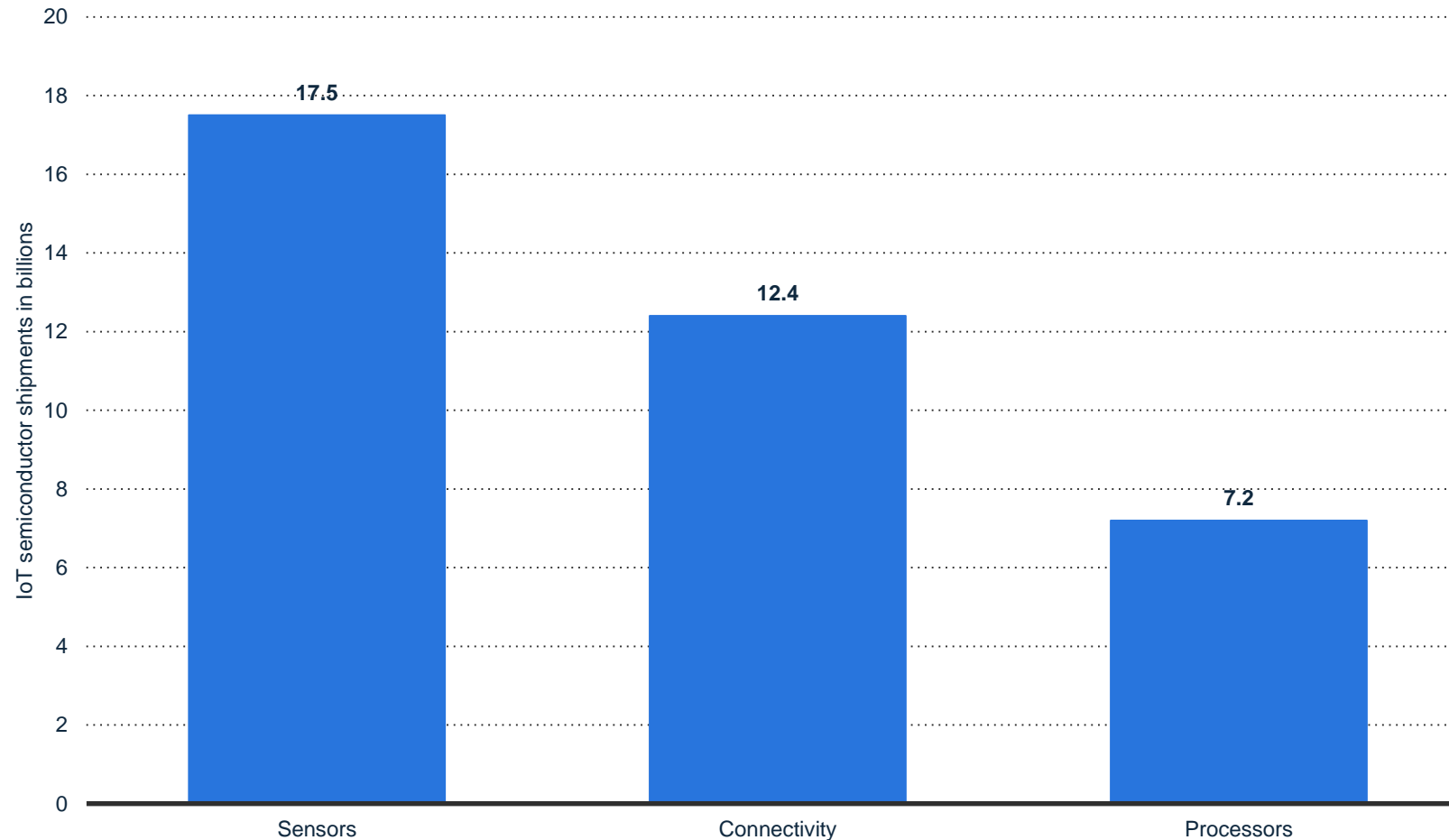
Summary

Patent Cluster

- **Start with deep engagement with a sector**
  - Get into the Customer and his value chain, build win-win for all players
- **China has spent 800 Billion on Smart City**
  - Momentum for IoT is in Asia . 700 Mhz band in China
  - Semi conductor guys adapting, Flexible Spectrum
- **The IoT stack seeing lot of innovation (Not yet a mere analytics play)**
  - IoT Network is a BIG HoT Spot
    - IoT network is LPWAN, Surprise Surprise LoRa marching ahead of NB-IoT
  - IoT Platforms are M&A Hot Spot
  - Sensors Early Birds? Anyone
- **Monetization in Digital World**
  - User may not be the buyer! Google
  - CAPEX to OPEX : Subscription
  - Local to Global : China WeChat, Alibaba

At 2016 IoTNext Jayant Kolla, Founder, Convergence Catalyst presented some ideas on monetizing IoT . It was preceded by a survey of innovation hotspot of over 10,000+ patents in Wirelsss sensor networks(IoT) by Dinkar Agrawal, CEO, Innlabz (IPExcel now). Dinkar noted surprising momentum of LoRa and sensors and China as the leader in patents filing. *These proved useful IoTNetworks like Amazon Sidewalk are coming*

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Shipments of semiconductors in Internet of Things (IoT) devices worldwide in 2018, by semiconductor type (in billions)

Internet of Things semiconductor shipments worldwide 2018, by type

Note: Worldwide; 2018
Further information regarding this statistic can be found on page 67.
Source(s): IHS Markit; ID 815388

Enabling technologies

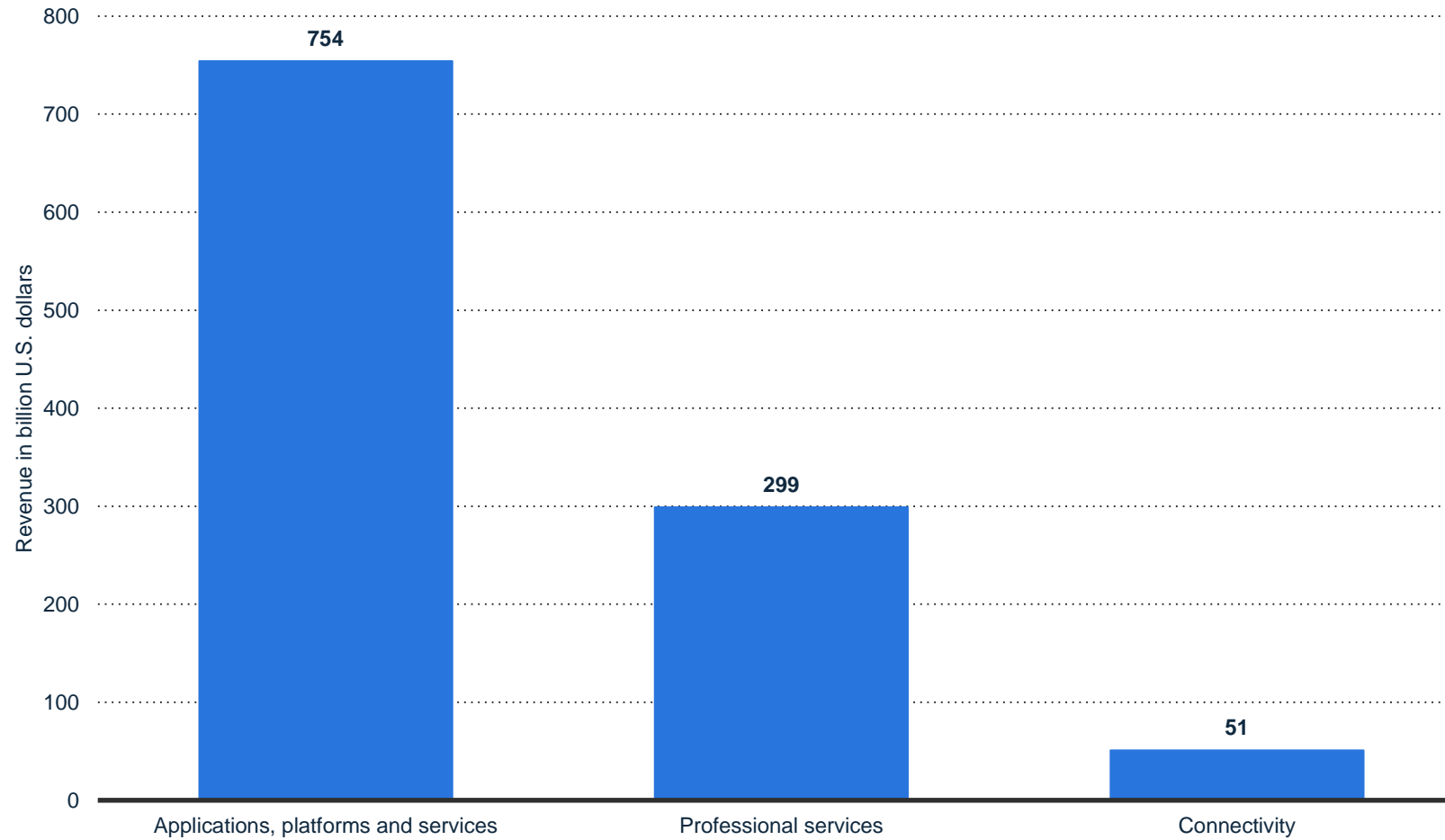## List of IoT Standards Organizations

- allseenalliance.org

- enocean-alliance.org

- github.com/openthread/openthread

- iofthings.org

- iot.eclipse.org

- m2m-alliance.com

- openconnectivity.org

- openmobilealliance.hs-sites.com/lightweight-m2m-specification-from-oma

- standards.ieee.org/develop/project/2413.html

- NB-IOT

- aioti.org

- bluetooth.com

- ietf.org

- iiconsortium.org

- ipso-alliance.org

- lora-alliance.org

- onvif.org

- openfogconsortium.org

- sgip.org

- threadgroup.org

- weightless.org/keyfeatures/open-standard

- wi-fi.org

- zigbee.org

- z-wavealliance.org

ITU
IEEE
W3

http://www.iotforindia.org/wiki/List_of_IoT_Standards_Organizations

IoT revenue forecast by segment worldwide in 2025 (in billion U.S. dollars)

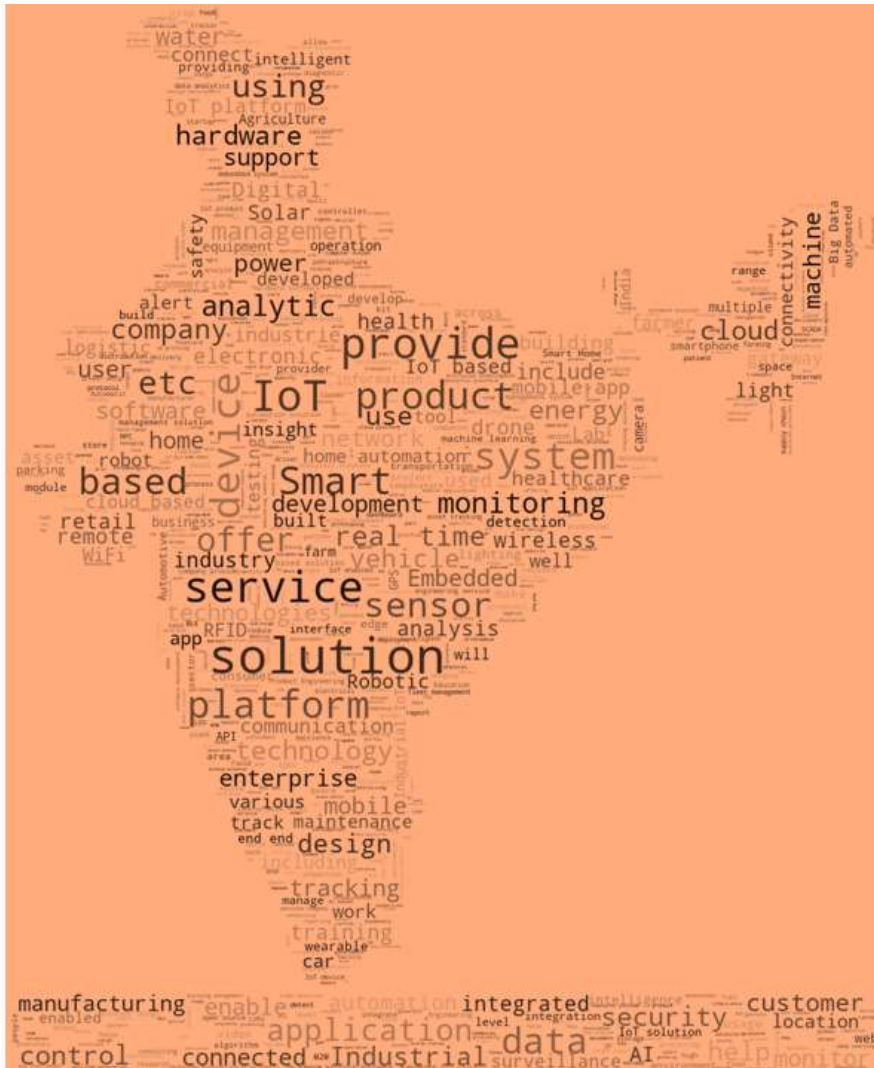**Global IoT revenue forecast 2025, by segment**

Note: Worldwide; 2018

Further information regarding this statistic can be found on page 58.
Source(s): GSMA Intelligence; ID 976045

Market size

Top IoT Influencers

1. **Tom Raftery : Global VP, Futurist and IoT Evangelist at SAP.**

2. **Stacey Higginbotham : Journalist who specializes in the topics of IoT, Artificial Intelligence, Machine Learning and semiconductors.**

3. **Andy Stanford-Clark : Distinguished engineer and is Master Inventor and IoT Evangelist at IBM**

4. **Sarah Cooper :General Manager of IoT Solutions, Amazon Web Services and the Vice Chair of the Internet of Things Community.**

5. **Johan den Haan : As Mendix's Chief Technology Officer, Johan leads the company's overall technical strategy.**

6. **David Stephenson: David is an Internet of Things strategist and writer, with a particular focus on "smart aging" using a combination of wearable devices and smart home devices to allow seniors to "age in place" with dignity, improved health, and lower expenses.**

7. **David Blaza: David is the managing director at Informa Power and has a passion for bringing new technology to market especially in the IoT space.**
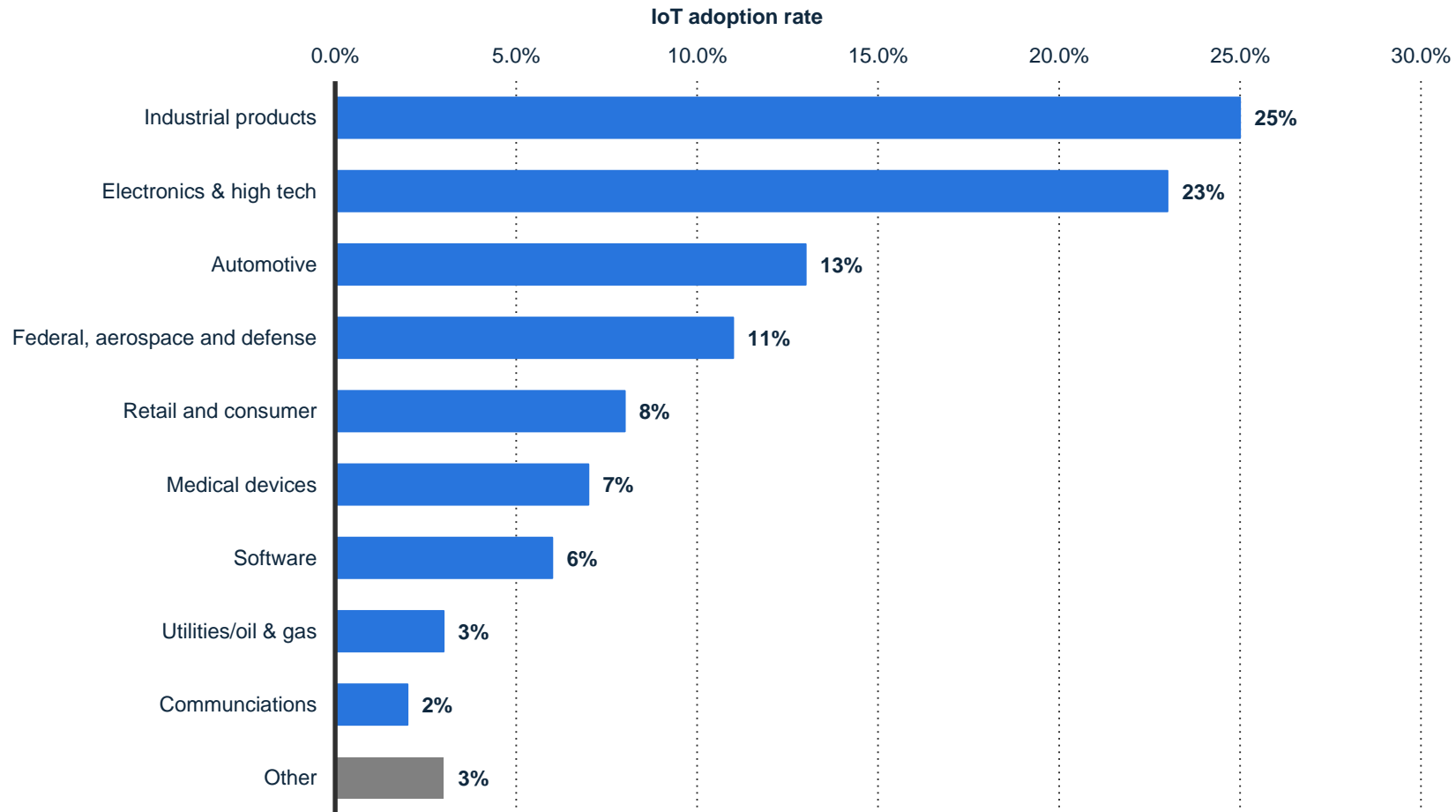
2019 IoT Start-up Directory

City-bin	Count
Ahmedabad	29
Bengaluru	720
Chennai	64
Coimbatore	30
Hyderabad	82
Kochi	31
Kolkata	14
Mumbai	94
NCR	180
Other	120
Pune	91
USA	32
Grand Total	1487

Vertical	Count
CityNation	99
Commercial	246
Consumer	273
Farm	162
Industrial	173
IoT_Services	480
Misc	245
Retail	173
Transport	287
Utility	82
Wellness	150
Grand Total	2370

Industrial IoT adoption worldwide as of 2017, by industry

Industrial IoT: global adoption rate by industry 2017

IoT adoption rate

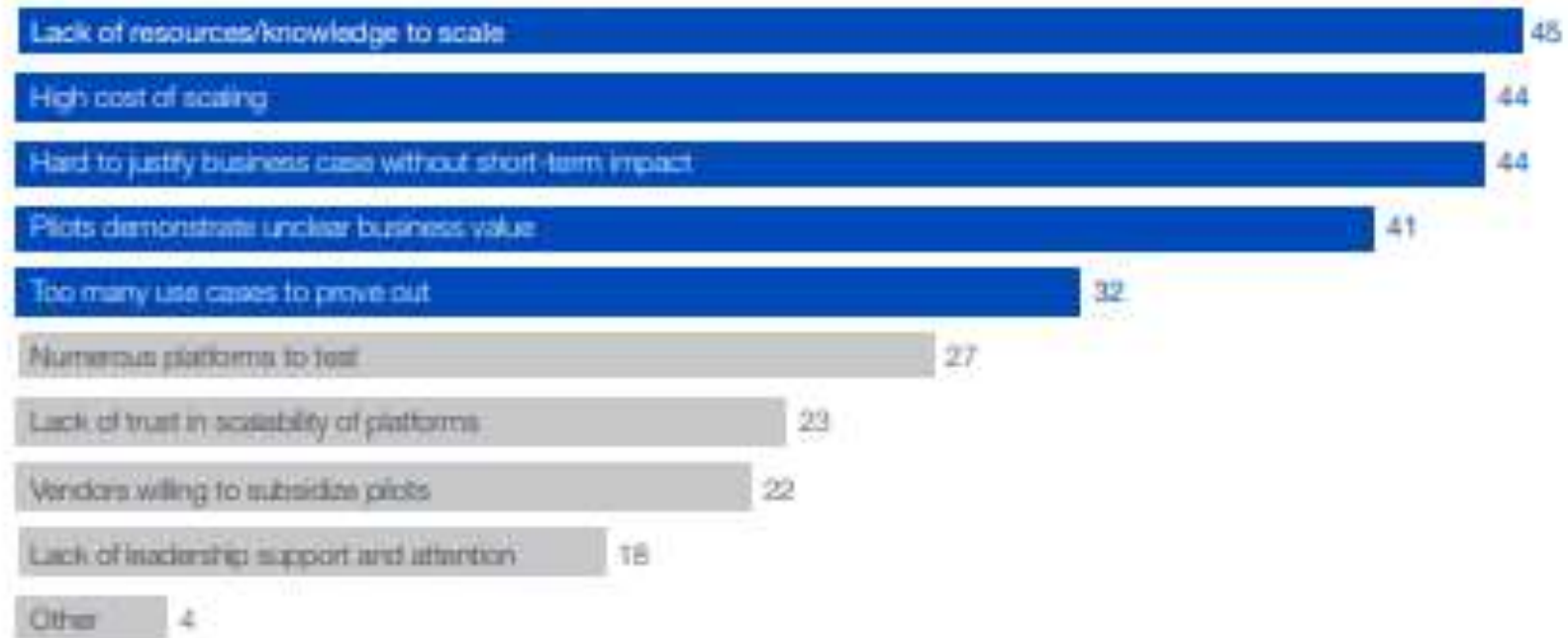| Industry	Adoption rate
Industrial products	25%
Electronics & high tech	23%
Automotive	13%
Federal, aerospace and defense	11%
Retail and consumer	8%
Medical devices	7%
Software	6%
Utilities/oil & gas	3%
Communciations	2%
Other	3%

Note: Worldwide
Further information regarding this statistic can be found on page 8.
Source(s): Various sources; ID 797392

Exhibit 15 — The main challenges to scalability are due to the difficulties in value alignment, the cost of the needed resources and efforts, and strategic ambiguities

Reasons preventing move from pilots to rollout
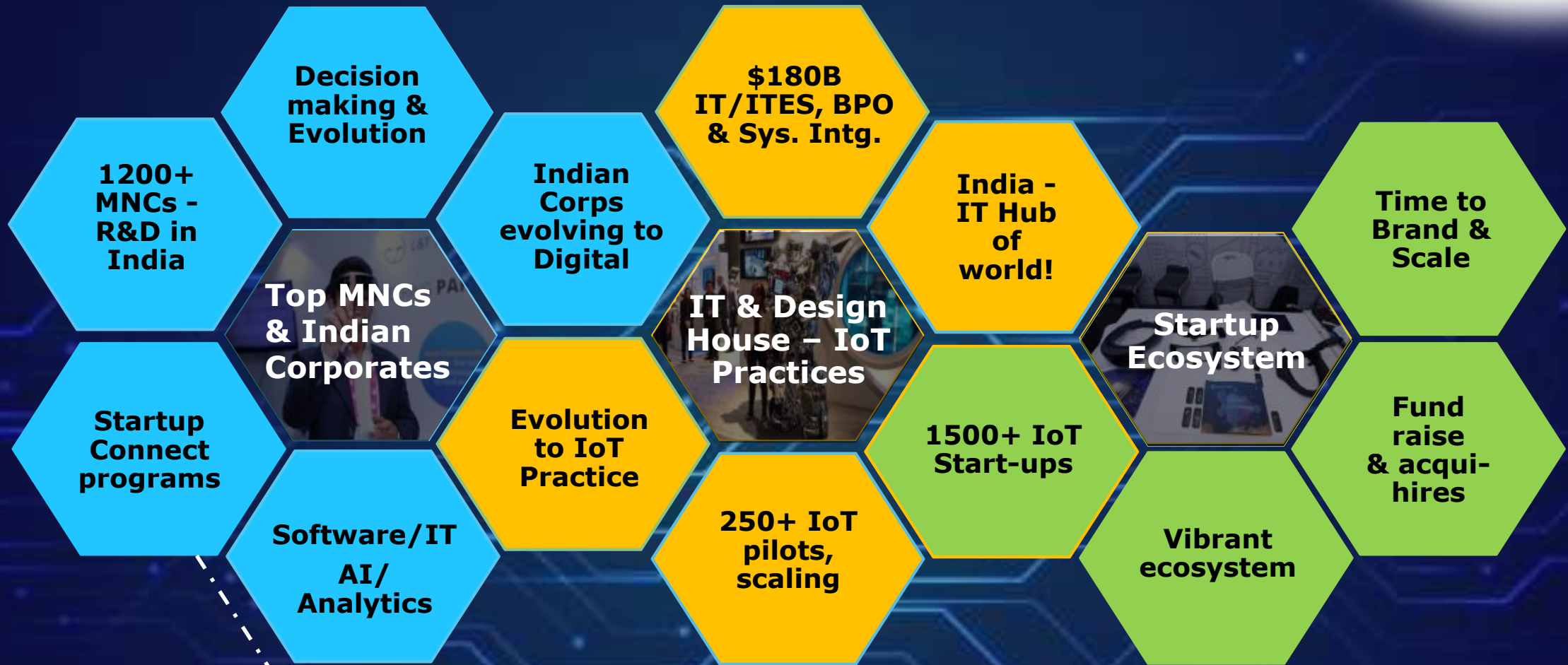Percent of respondents choosing reason as top 3

Lack of resources/knowledge to scale	48
High cost of scaling	44
Hard to justify business case without short-term impact	44
Pilots demonstrate unclear business value	41
Too many use cases to prove out	32
Numerous platforms to test	27
Lack of trust in scalability of platforms	23
Vendors willing to subsidize pilots	22
Lack of leadership support and attention	18
Other	4

Source: McKinsey in collaboration with the World Economic Forum

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Top IoT Events in 2020

- 1. **Internet of Things Evolution Expo**

- 2. **Bosch Connected World**

- 3. **Mobile World Congress Barcelona**

- 4. **Industry of Things World USA**

- 5. **IoT Tech Expo Global**

- 6. **Internet of Things World**

- 7. **MWC Los Angeles**

- 8. **IoT Solutions World Congress**

- 9. **Industrial IoT World**

- 10. **IoT Tech Expo North America**