The growth of the IoT market

Matt Hatton
Founding Partner
Transforma Insights

10 May 2022

IoT Solutions World Congress

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

TRANSFORMA INSIGHTS

Introducing Transforma Insights in 30 seconds

A new technology research firm…

Research

Overview of our research offering and how to subscribe

Discover more about how Transforma Insights' services can support your business.

Learn more →

Best Practice & Vendor Selection Database

Our analysis of hundreds of case studies of technology implementations to support your decision-making.

Learn more →

Reports

The insight you need on new technologies, competitive positioning and diverse other key DX issues.

Learn more →

Vendor Profiles

Essential insight on the propositions and capabilities of vendors across Digital Transformation.

Learn more →

TAM Forecasts

Comprehensive quantitative view on the total addressable market opportunity for new technologies globally.

Learn more →

Custom Research & Consulting

Meeting your requirements for specific strategy, marketing and technology projects.

Learn more →

…with deep experience, building decision-support products based on robust evidence

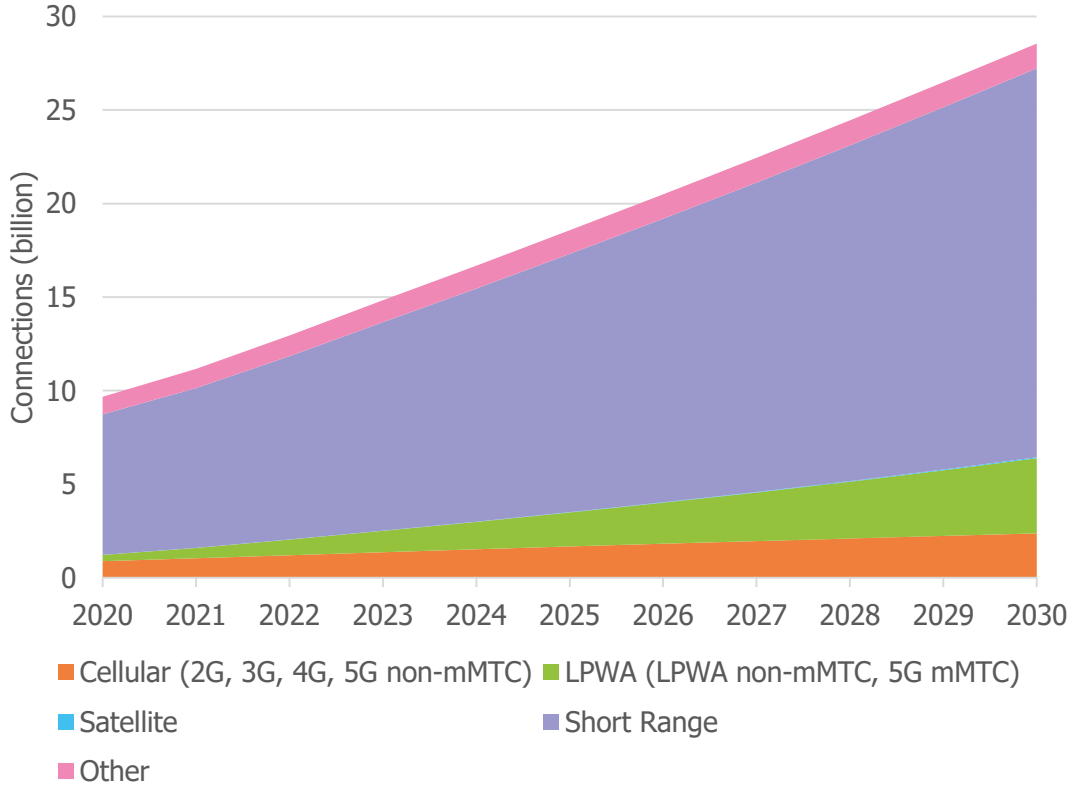
Evidence Based	▪ Less focus on 'what the analyst thinks'. ▪ More focus on what the evidence says.
Products Centric	▪ Sophisticated interactive products tailored to user needs. ▪ Report-based analysis only where needed.
Bridging the gap	▪ Providing End Users with visibility into vendor capabilities. ▪ Providing Vendors with insight into End User needs.
We've done it before	▪ Founders previously founded Machina Research. ▪ #1 Analyst in the IoT space, exited via sale to Gartner in 2016.

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

TRANSFORMA INSIGHTS

28.5 billion connected devices by the end of 2030

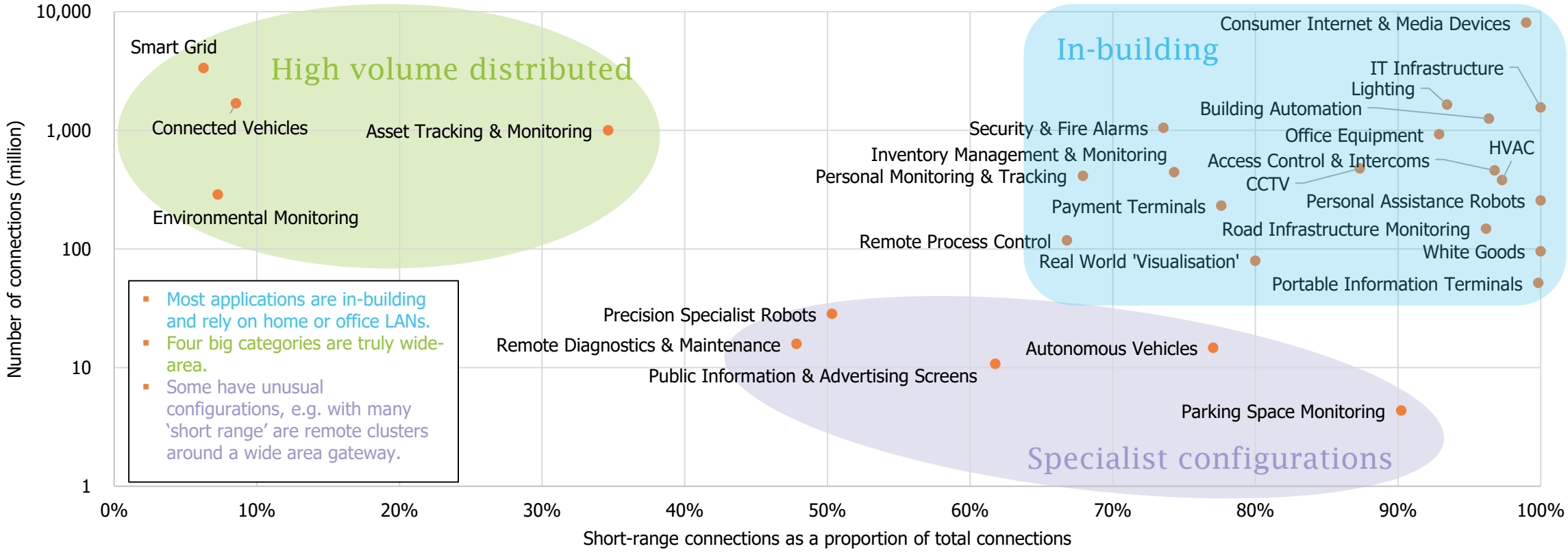
Global IoT Connections 2020-2030
[Source: Transforma Insights, 2022]



- Total global IoT connections will grow from almost 10 billion at the end of 2020 to 28.5 billion at the end of 2030.
- Short range, inevitably, accounts for the lion's share, (78% in 2020, 73% in 2030)
- Cellular (excluding mMTC LPWA) goes from 9% to 8% of connections over the period.
- LPWA overall (including mMTC such as NB-IoT and LTE-M and unlicensed such as LoRaWAN) grows from 3% to 14%.

Short-range connectivity dominates most use cases

IoT connections vs percent Short-range connections, 2030
[Source: Transforma Insights TAM Forecasts, 2022]



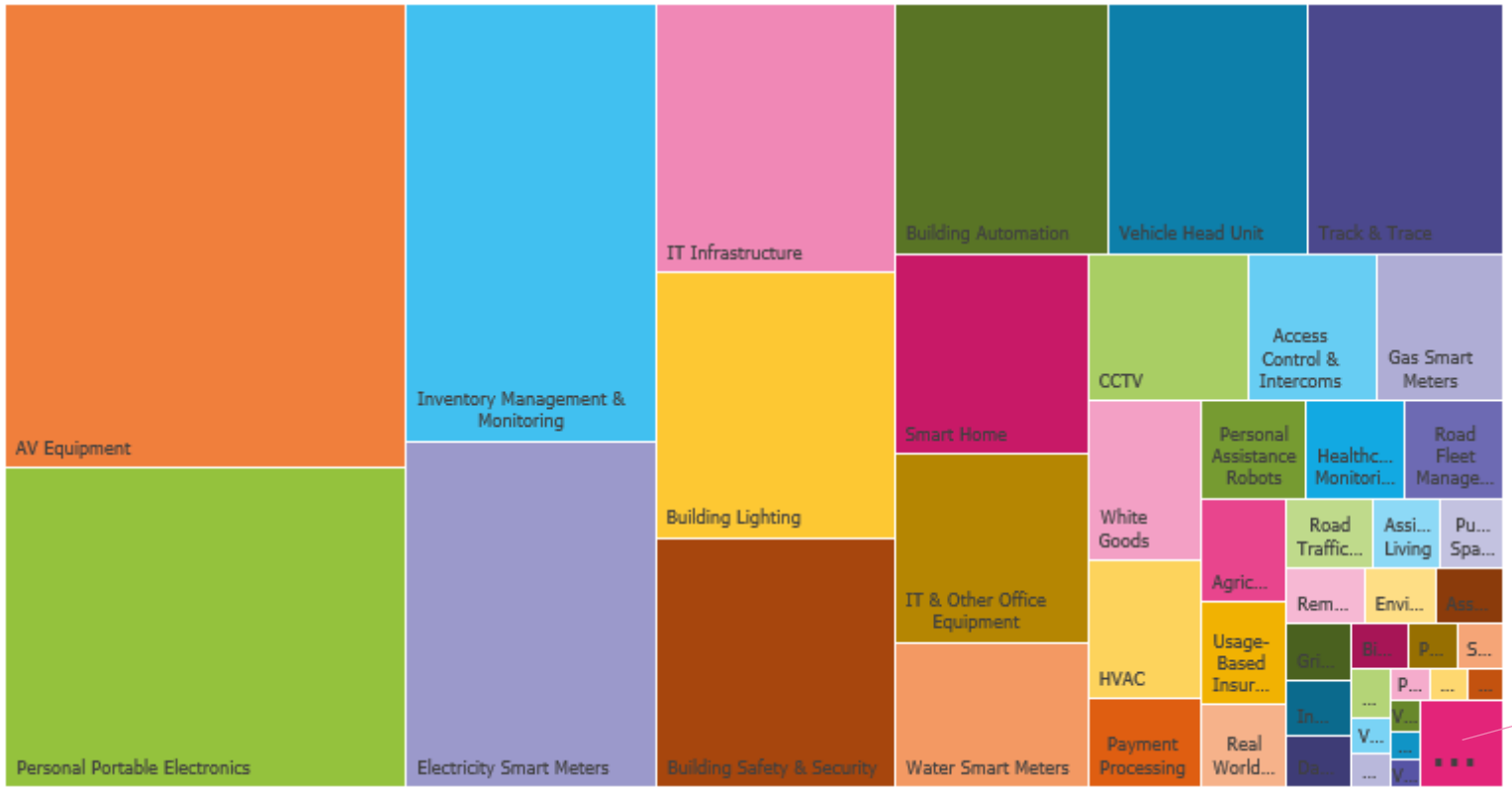
Internet of Things · Hyperconnectivity · Data Sharing · RPA · 3D Printing · Distributed Ledger
AI · HMI · Edge · Robotics · Next Gen PLM · Future Tech

TRANSFORMA INSIGHTS

A long-tail of IoT applications

- Top 10 applications account for 72% of connections
- Particularly focused on short range connected applications such as personal and home electronics.
- Inventory management, smart metering, IT infrastructure, building lighting, building security, building automation, vehicle head units, and track & trace make up remainder of top 10.

IoT connections per use case (67) in 2030
[Source: Transforma Insights, 2022]



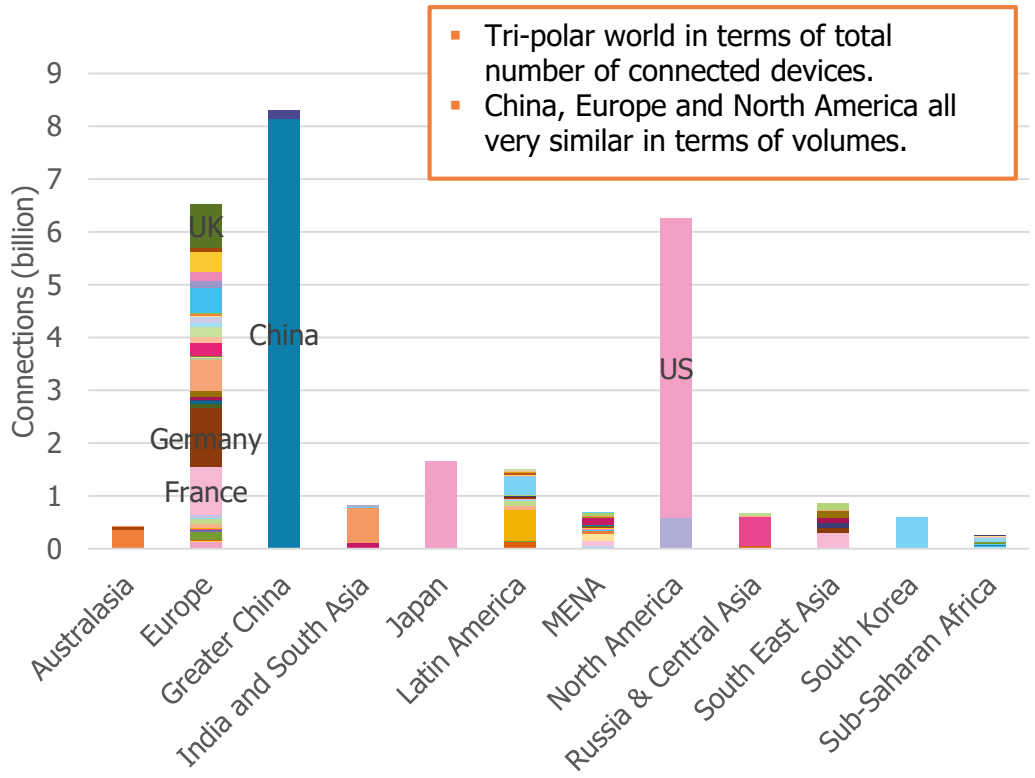
Internet of Things · Hyperconnectivity · Data Sharing · RPA · 3D Printing · Distributed Ledger

AI · HMI · Edge · Robotics · Next Gen PLM · Future Tech

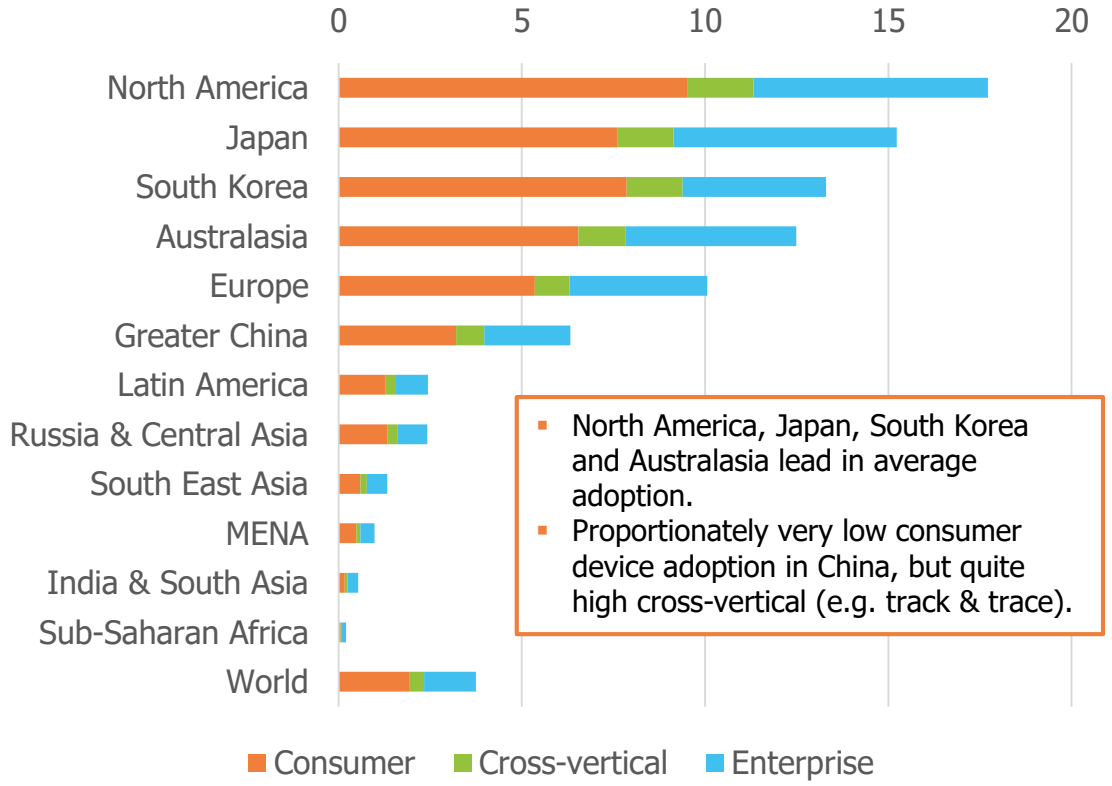
TRANSFORMA INSIGHTS

Tripolar world, China and Europe lag per capita

IoT connections in 2030
[Source: Transforma Insights TAM Forecasts, 2020]



IoT connections per head of population in 2030
[Source: Transforma Insights TAM Forecasts, 2022]



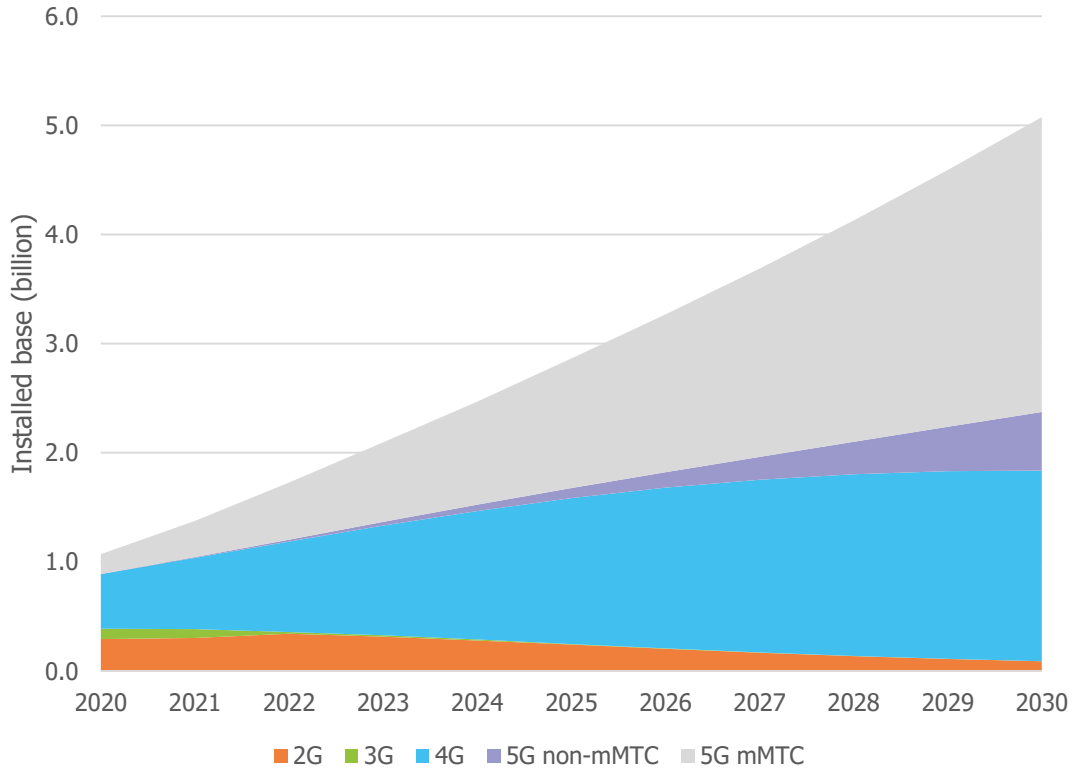
Internet of Things
Hyperconnectivity
Data Sharing
RPA
3D Printing
Distributed Ledger
AI
HMI
Edge
Robotics
Next Gen PLM
Future Tech

TRANSFORMA INSIGHTS

Generation shift: 5G arrives, 2G and 3G depart

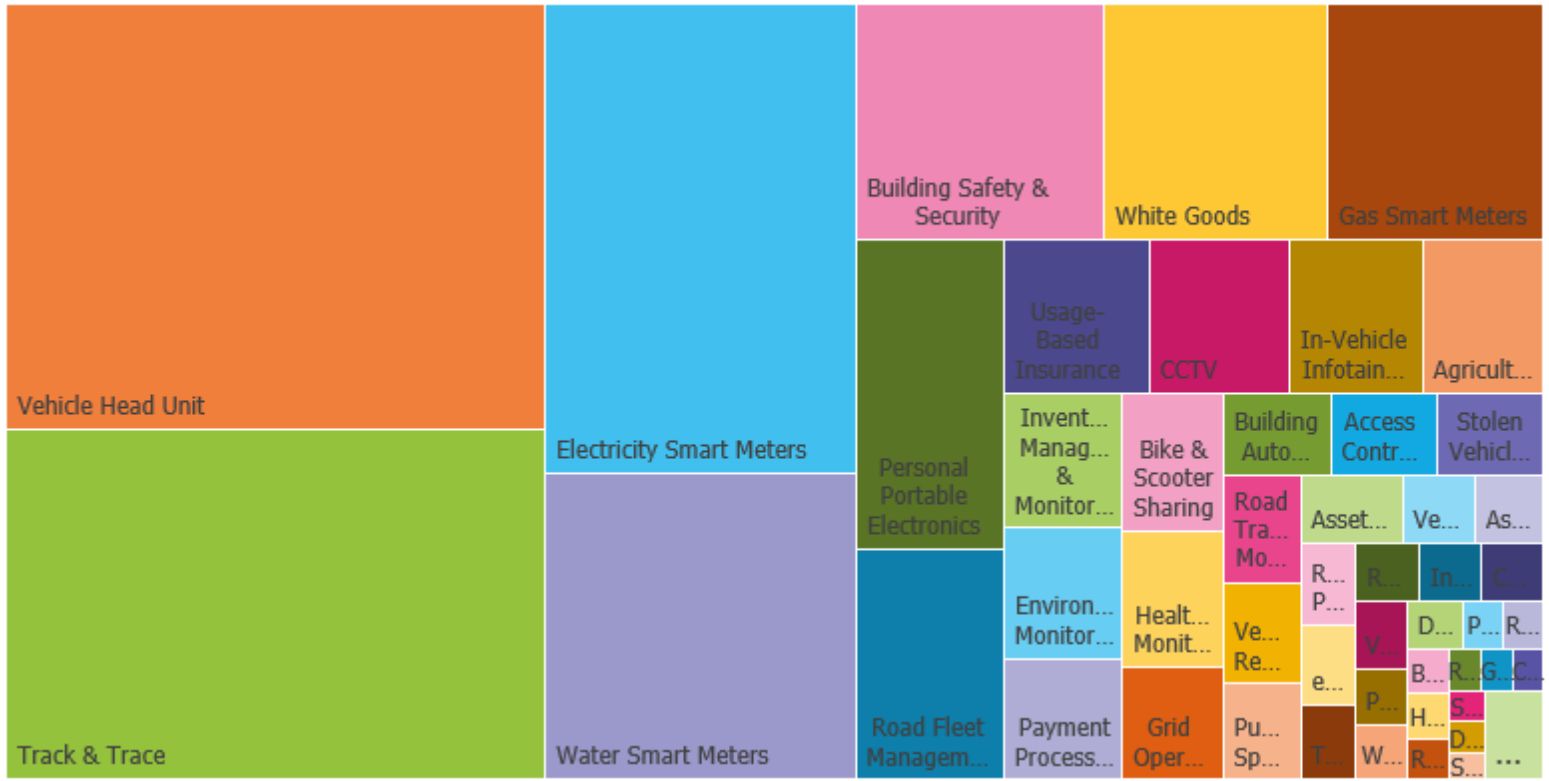
- Cellular connections (incl. mMTC) will grow from 1.1 billion at end 2020 to 5.1 billion at end 2030.
- Total '5G' including mMTC will be 3.2 billion, but just 536 million 'full' 5G. 5G growth is about future-proofing and re-badging the LPWA techs.
- Biggest 5G non-mMTC use cases are vehicle head units, accounting for 44% of shipments in 2030.
- Excluding mMTC, annual shipments grow only relatively slowly from 147 million to 360 million units. Major portion of the mMTC growth is based on replacing 2G and 3G. By 2030 mMTC shipments are 550 million.
- By 2028 we anticipate no shipments of devices where 2G and/or 3G is the highest technology.

Global cellular IoT connections 2019-2030
[Source: Transforma Insights, 2022]



Connected cars and smart meters dominate cellular

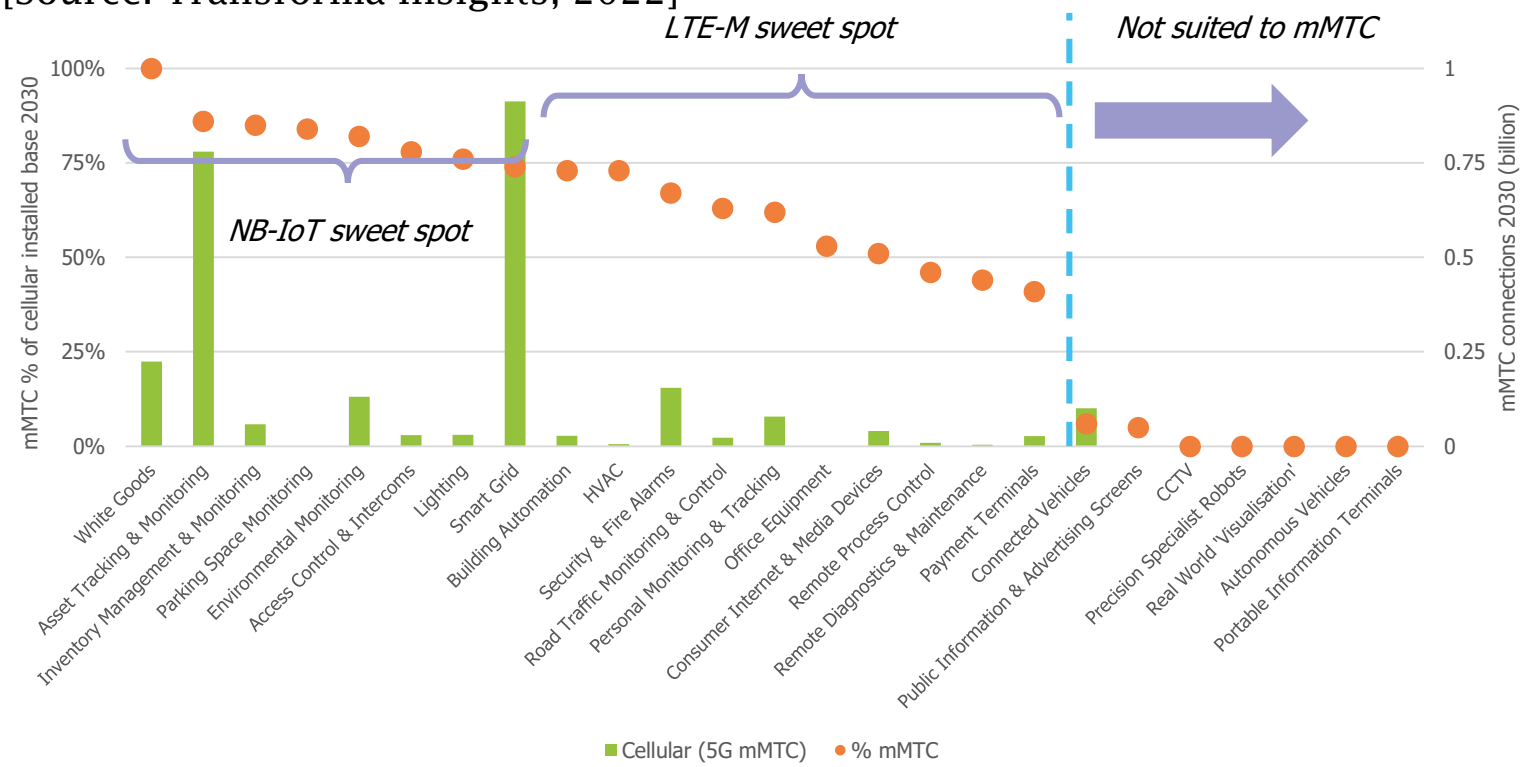
Global Cellular Connections by Use Case (20) in 2030
[Source: Transforma Insights, 2022]



- Cellular connections (particularly non-mMTC) are highly concentrated in just a few use cases.
- Connected vehicles dominates, followed by track & trace and smart metering/smart grid.
- For many of the applications the use of mMTC is a straight swap out of 2G.

NB-IoT will drive mMTC connection count, but LTE-M is a critical 'bridging' technology

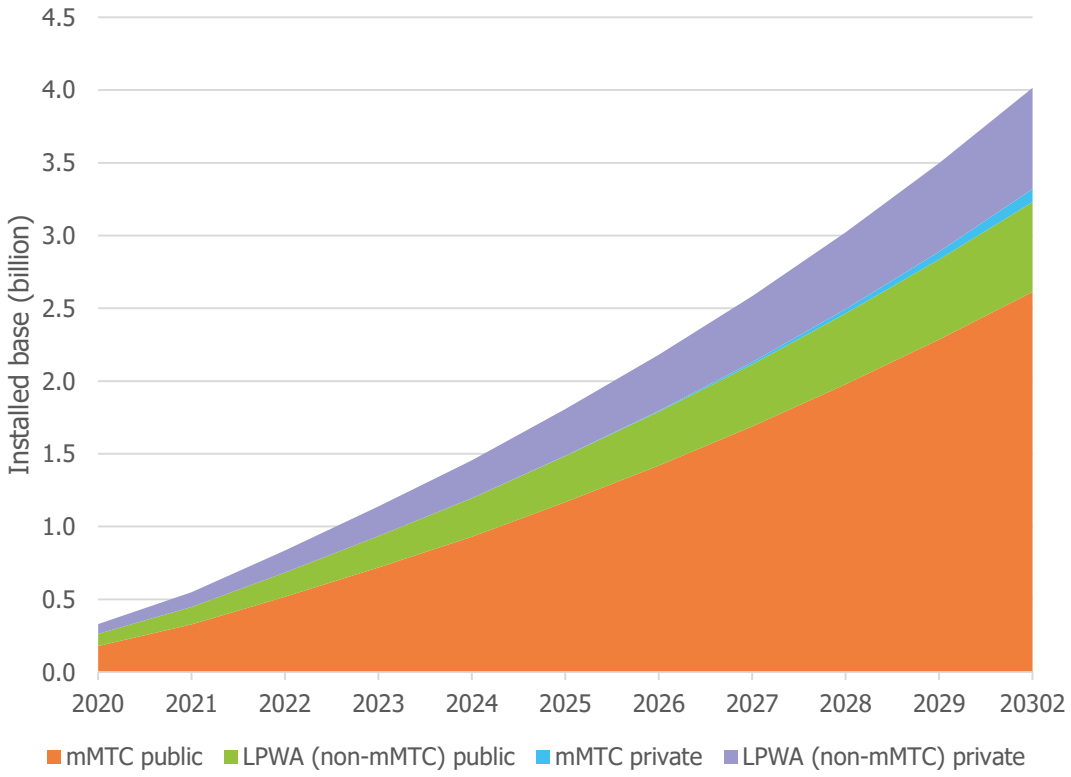
5G mMTC as a proportion of cellular connections, by Use Case (20) in 2030
[Source: Transforma Insights, 2022]



- Smart Grid and Asset Tracking & Monitoring dominate connection count.
- Two clear groups of Use Case in terms of suitability for mMTC.
- Use Cases with a good mix of cellular and mMTC connections tend to use LTE-M.
- LTE-M is a good substitute for 2G cellular.
- Similar dynamics at application level.

Overall, LPWA connections will grow to 4bn by 2030

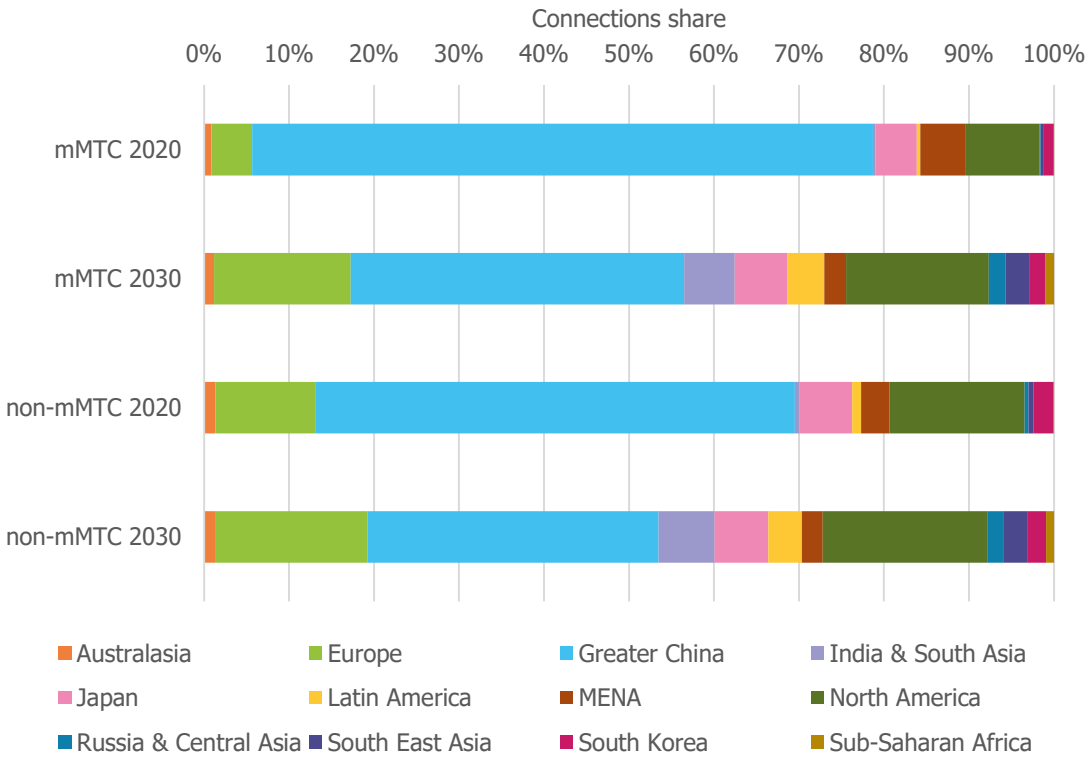
Global Low Power Wide Area Connections 2020-2030
[Source: Transforma Insights, 2022]



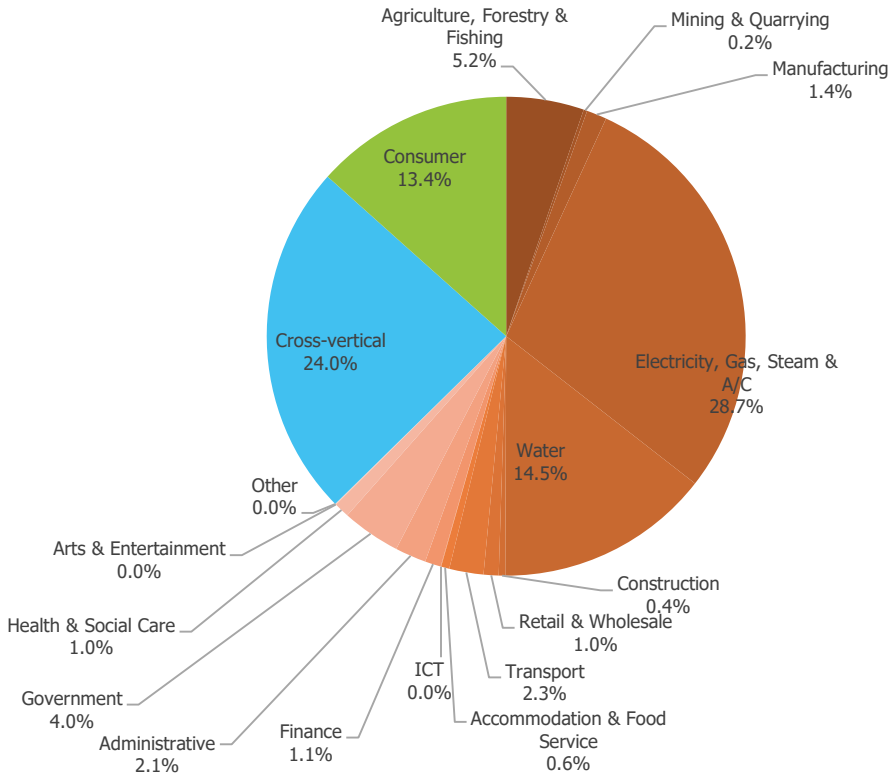
- Two-thirds of connections will be mMTC (i.e. NB-IoT and LTE-M, and successors)
  - 97% of mMTC connections will use public networks.
- Remainder use licence exempt spectrum with technologies such as LoRaWAN
  - 47% public networks/53% private.
- Upside potential with currently nascent applications like NB-IoT connected postal labels, or other 'disposable devices'.

LPWA will be dominated by enterprise solutions in China, North America, and Europe

LPWA regional splits in 2030
[Source: Transforma Insights, 2022]



Vertical split of LPWA connections in 2030
[Source: Transforma Insights, 2022]

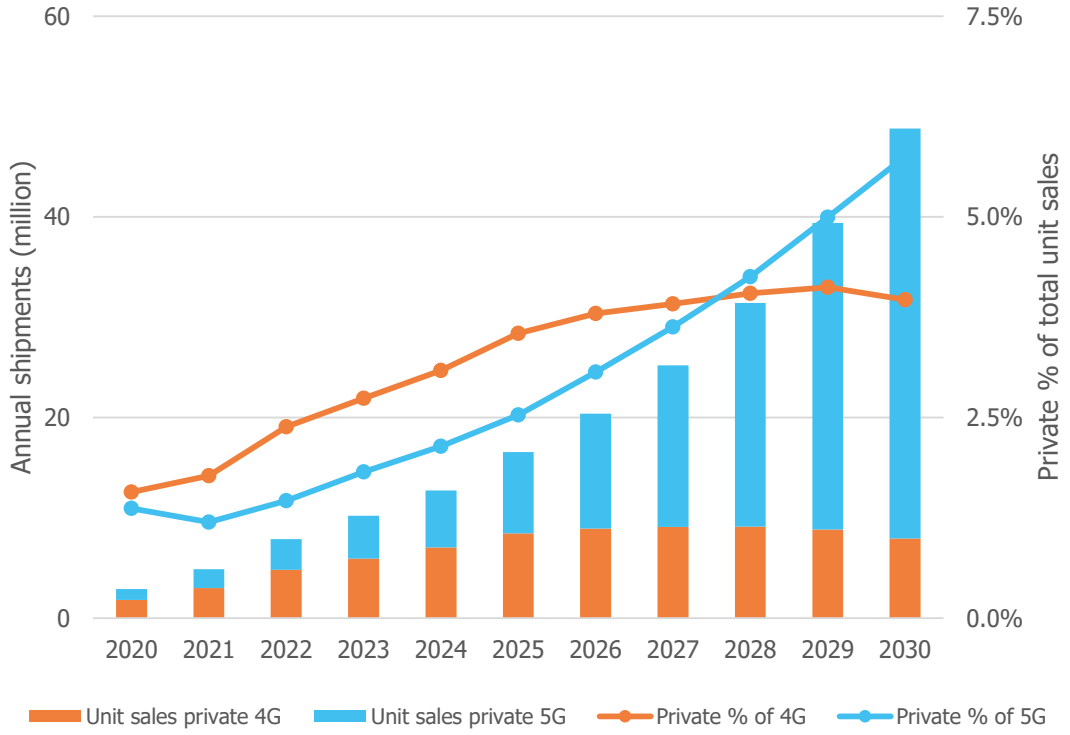


Internet of Things
Hyperconnectivity
Data Sharing
RPA
3D Printing
Distributed Ledger
AI
HMI
Edge
Robotics
Next Gen PLM
Future Tech

TRANSFORMA INSIGHTS

Growth of Mobile Private Networks (MPNs)

Private network share of cellular IoT connections
[Source: Transforma Insights, 2022]

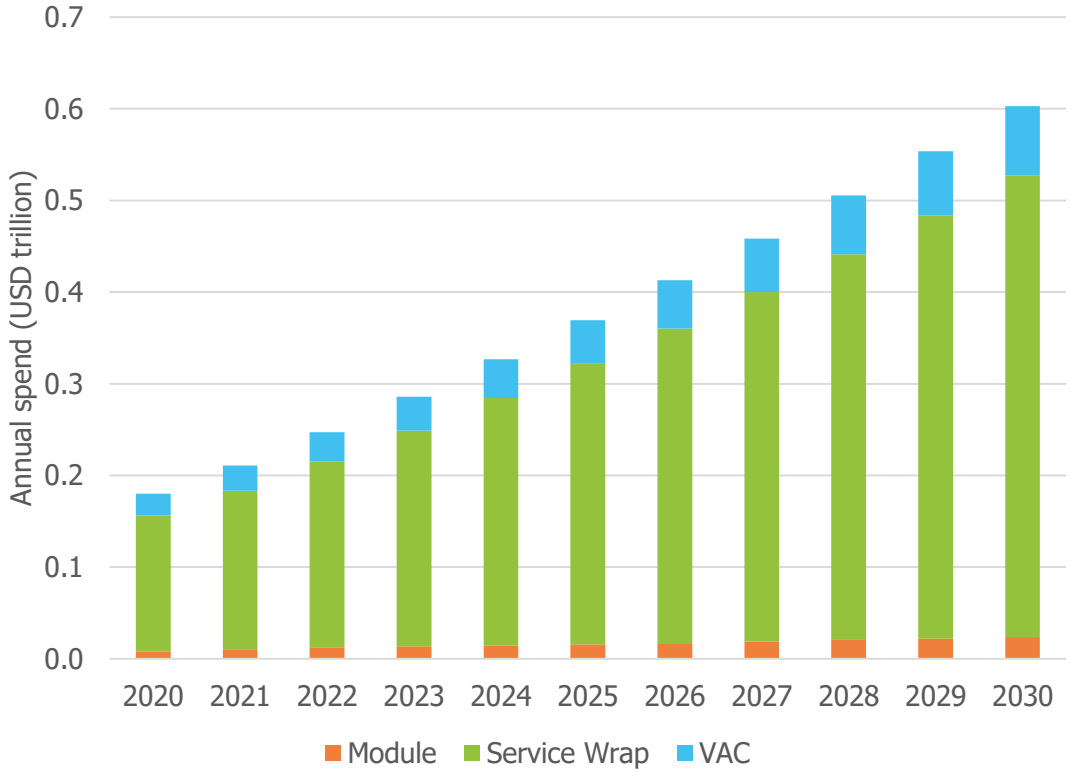


- Triggered in part by allocation of spectrum for private use, e.g. 3.5GHz CBRS in the US, ~3GHz bands in Europe etc.
- Vast majority is LTE today but migrating to 5G fast.
- Carriers control ~50% of the market.
- We expect growth in hybrid approaches linking supply chain with factory operations.
- Focus verticals are Agriculture, Manufacturing and Transportation.
- Biggest use cases are Agricultural Monitoring, CCTV, Asset Tracking and Inventory Management.

Over $600 billion in global IoT spend

- Annual spend from IoT will grow from USD180 billion in 2020 to USD603 billion in 2030.
- NB – now excluding device cost.
- In 2020 83% comes from service wrap.
- Connectivity spend is consistently 13% of revenue.
- 'Service wrap' is highly distributed across many companies. Connectivity revenue and module revenue are highly concentrated.

Global annual IoT spend 2020-2030
[Source: Transforma Insights, 2022]

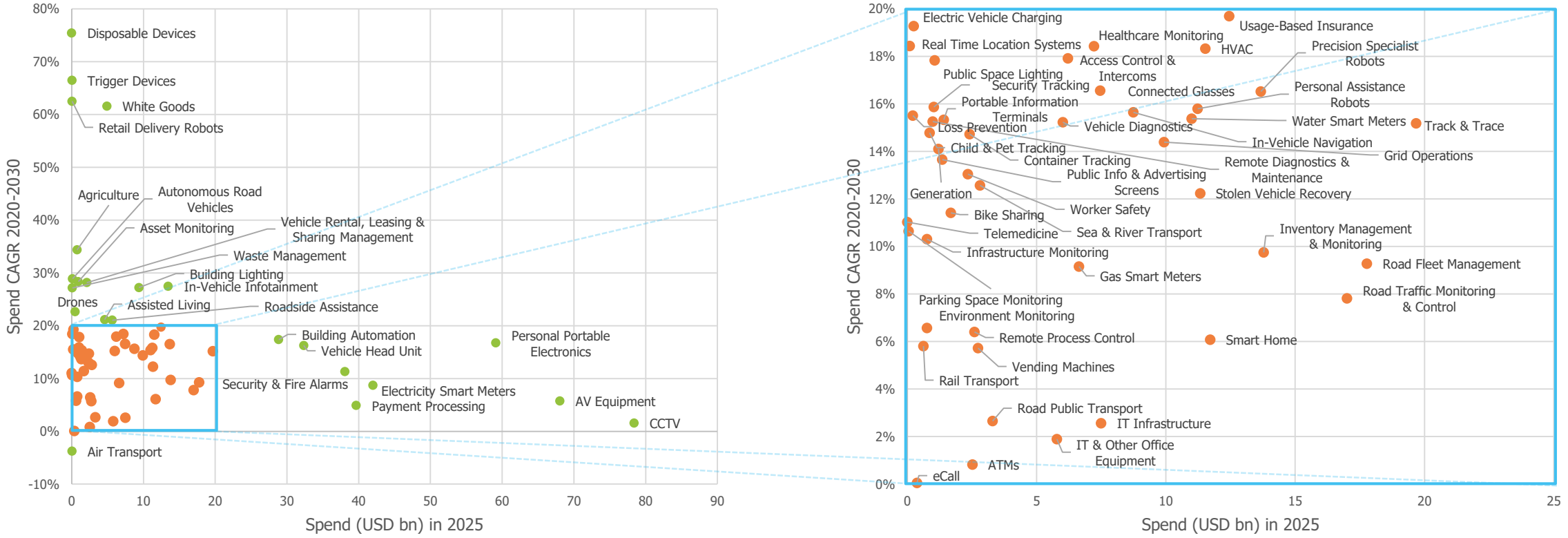


Internet of Things
Hyperconnectivity
Data Sharing
RPA
3D Printing
Distributed Ledger
AI
HMI
Edge
Robotics
Next Gen PLM
Future Tech

TRANSFORMA INSIGHTS

CCTV, consumer electronics, smart meters, payment terminals, security, and connected car dominate

IoT spend CAGR 2020-2030 and total 2025, by application group
[Source: Transforma Insights TAM Forecasts, 2022]



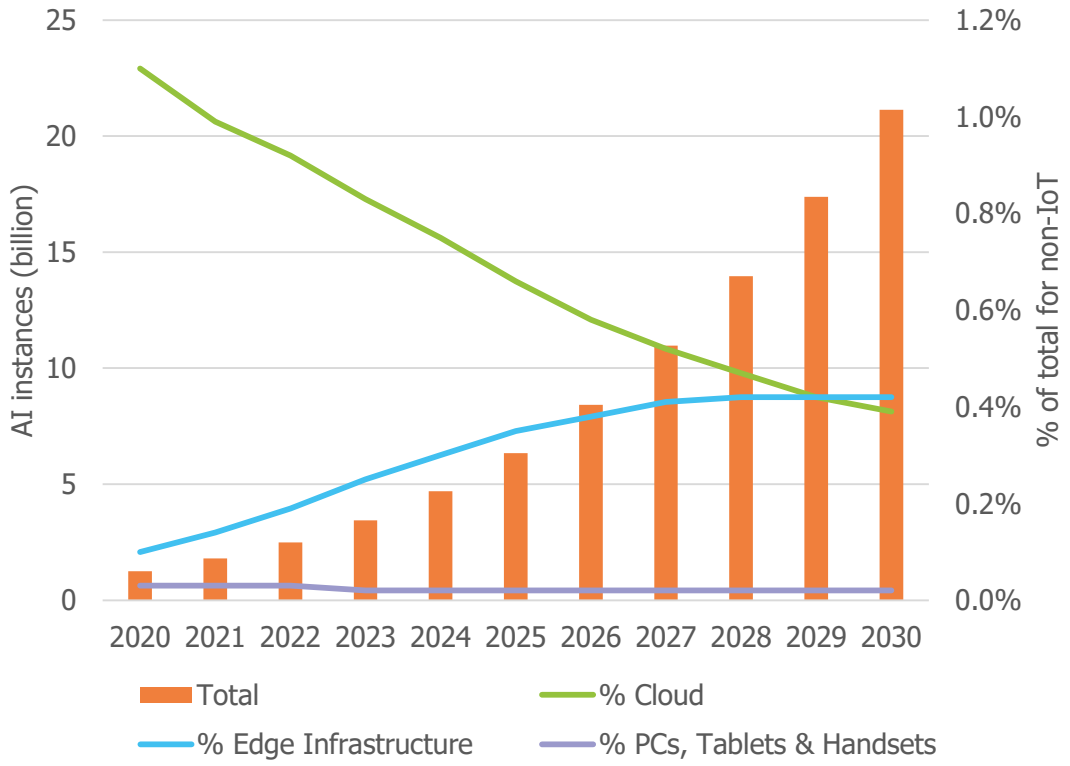
Internet of Things · Hyperconnectivity · Data Sharing · RPA · 3D Printing · Distributed Ledger

AI · HMI · Edge · Robotics · Next Gen PLM · Future Tech

TRANSFORMA INSIGHTS

IoT overwhelmingly dominates AI instances

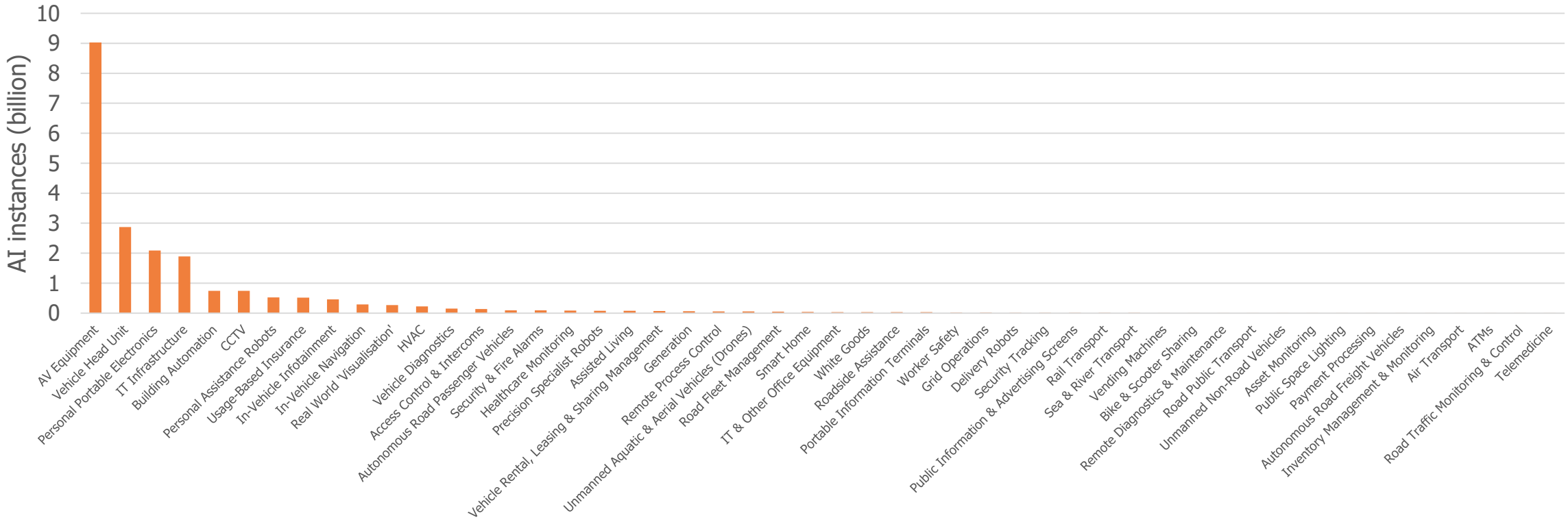
AI instances, with share for non-IoT
[Source: Transforma Insights, 2022]



- There will be over 21 billion deployed AI instances in 2030, up from 1.8 billion in 2021
- Over 99% of them will be associated with Internet of Things devices.
- Cloud deployments are eventually overtaken by edge.
- PCs, Tablets and Handsets have limited growth.

AI IoT instances dominated by consumer electronics

IoT-based AI instances by application group, 2030
[Source: Transforma Insights, 2022]

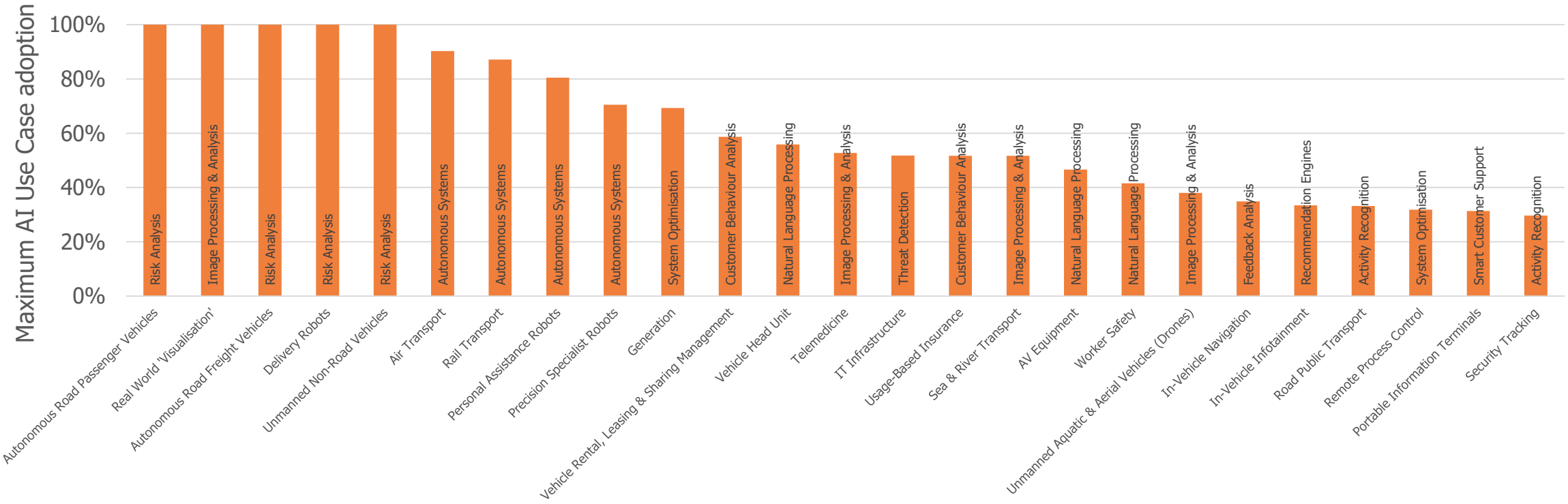


Internet of Things
Hyperconnectivity
Data Sharing
RPA
3D Printing
Distributed Ledger
AI
HMI
Edge
Robotics
Next Gen PLM
Future Tech

TRANSFORMA INSIGHTS

Autonomous systems lead AI adoption in IoT

Maximum AI Use Case adoption by application group, 2030
[Source: Transforma Insights, 2022]



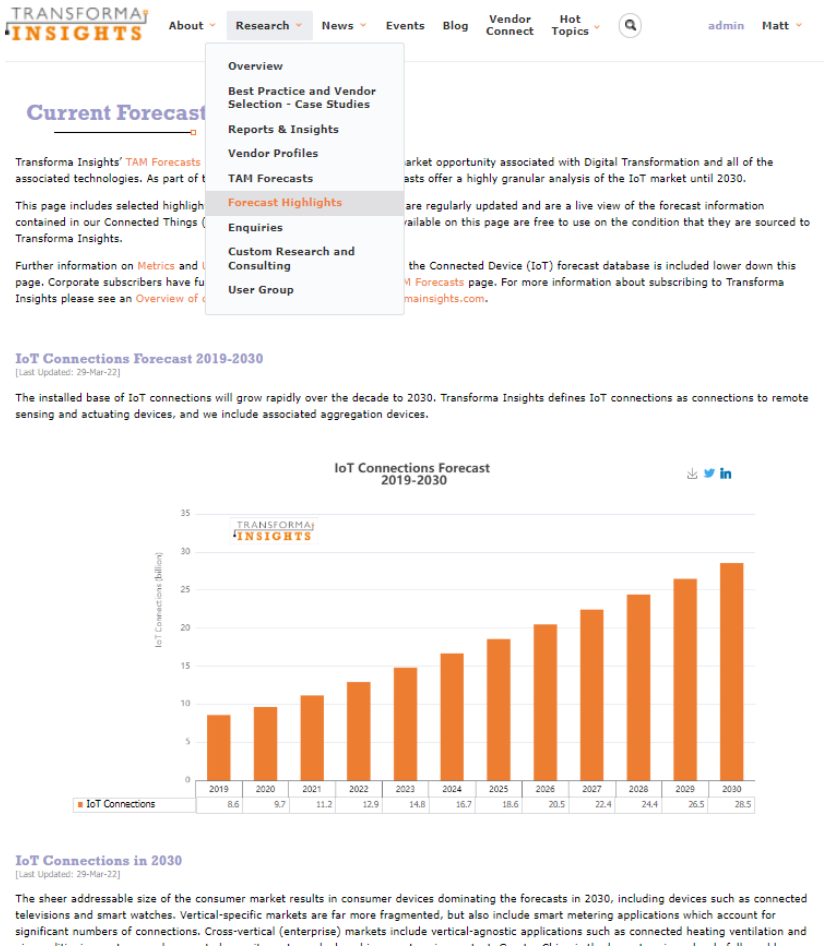
Internet of Things
Hyperconnectivity
Data Sharing
RPA
3D Printing
Distributed Ledger
AI
HMI
Edge
Robotics
Next Gen PLM
Future Tech

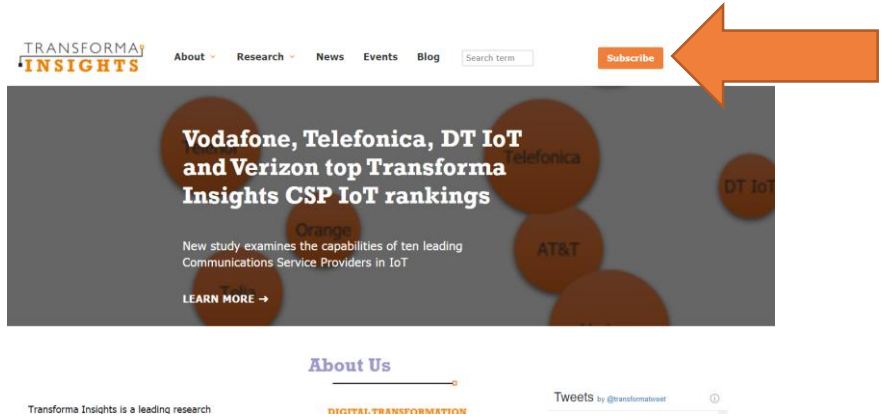
TRANSFORMA INSIGHTS

Summary

- IoT is (and will be) a huge opportunity
- There is no 'IoT market', but a series of separate markets
- AI will be very closely interlinked with AI
- Focus on solving problems

Access to Transforma Insights data





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

TRANSFORMA INSIGHTS

For more information

TRANSFORMA INSIGHTS

transformainsights.com

@transformatweet

enquiries@transformainsights.com