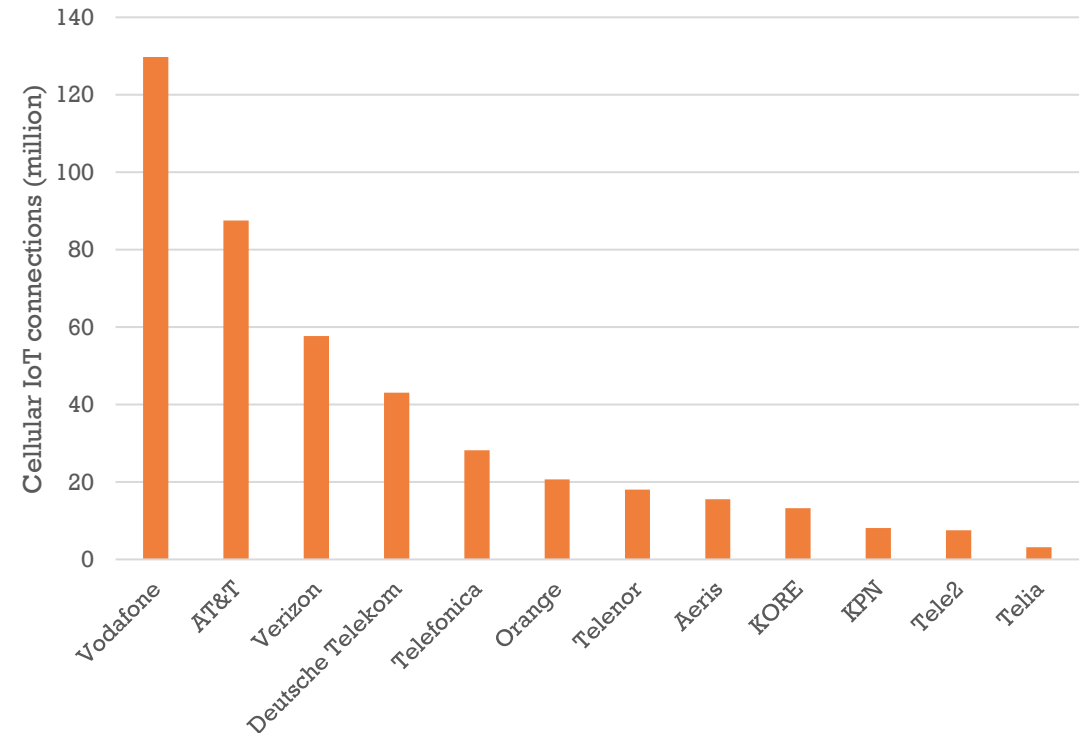# CSP IoT Peer Benchmarking Report 2021

- Our annual study of the capabilities of Communications Service Providers in delivering IoT.

- Analyses the strategies and capabilities of twelve leading providers of global IoT connectivity.

- Aeris Communications, AT&T, Deutsche Telekom, KORE, KPN, Orange, Tele2, Telefónica, Telenor, Telia, Verizon and Vodafone.

Cellular IoT connections of the twelve CSPs profiled
Source: Transforma Insights, 2021

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

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CSP IoT Peer Benchmarking Report 2021

- Profiling six main areas:

  - **Background** section provides information on the history of the organisation, its structure, size of the team, statistics such as numbers and types of connections, and other salient information.

  - **Networks** section look at capabilities to support connected devices using both public broadband (e.g. LTE and 5G) and narrowband (e.g. NB-IoT or LoRa) networks as well as private networks installed at the customer premises. This includes consideration of how able the CSP is to support connectivity around the world including via partners and alliances.

  - **Middleware** section focuses on a diverse set of platforms and the CSP strategies related to them, most prominently connectivity management, device management, and application enablement.

  - **Data Management**, including hosting, analytics and capabilities associated with post-event data management such as exchanges and trading platforms.

  - **Solutions and Services** covering the approach to addressing vertical sectors either through packaged propositions or through consulting and systems integration.

  - **Other** section which looks at competitive differentiators and capabilities not otherwise considered in the other sections. This includes security and devices.

COMMUNICATIONS SERVICE PROVIDER (CSP) IOT PEER BENCHMARKING REPORT 2021

MATT HATTON, FOUNDING PARTNER

October, 2021

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

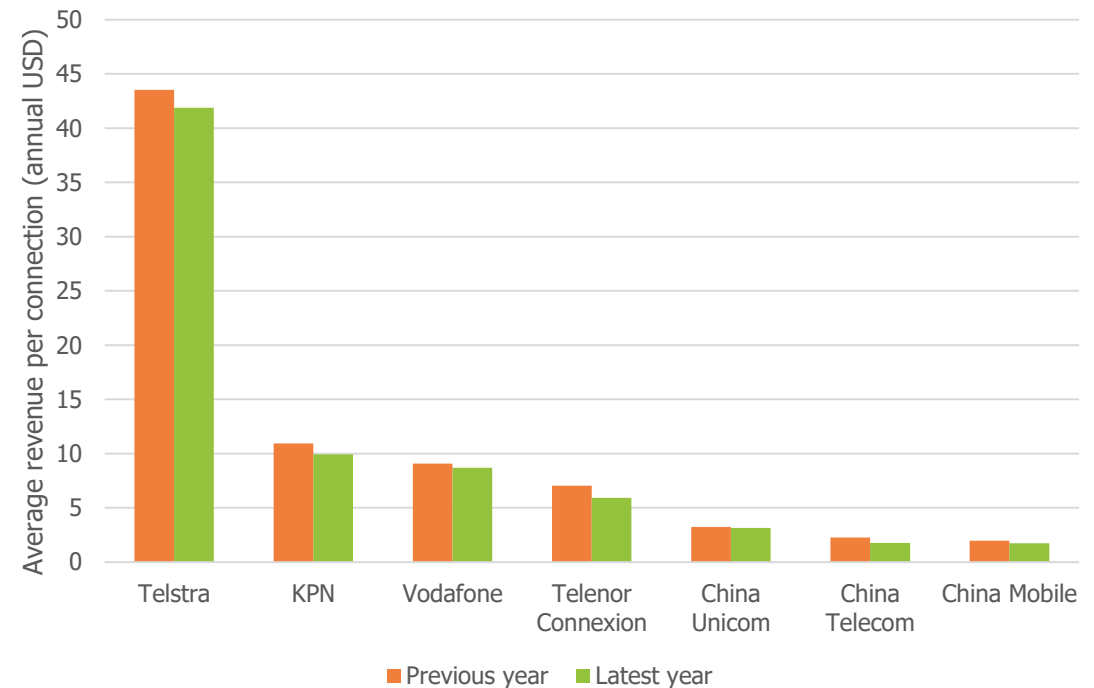AI HMI Edge Robotics Next Gen PLM Future Tech

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A new paradigm for IoT connectivity: '$1 IoT'

- Average revenue per cellular IoT connection currently sits somewhere around USD0.5-1/month.

- We hypothesise that it's heading towards $1/year as a prevailing rate for the pure connectivity.

- In China it's already approaching that (but we must be cautious).

- KPN added 1.25 million connections in 2020 for an additional EUR6 million revenue (also apply caution here).

Average revenue per connection for selected connectivity providers
Source: Transforma Insights, 2021

Average revenue per connection (annual USD)

Telstra · KPN · Vodafone · Telenor Connexion · China Unicom · China Telecom · China Mobile

■ Previous year ■ Latest year

A new paradigm for IoT connectivity: '$1 IoT'

Network devices worry-free

- 750 MB data volume
- 250 SMS
- 10 year term

Cellular networks:

- 2G & 4G
- 2G, NB-IoT & LTE-M machine network

Inclusive services:

- ✔ Everything online - order quickly and easily and network your devices in just a few business days
- ✔ IoT Easy Connect Portal: Manage and analyze your SIM cards easily and from anywhere
- ✔ Roaming: wide network coverage within Europe and the USA[2]
- ✔ Further features included: MQTT[3], alarm functions & limits, data streams, online billing, web ticketing

Once

12.99 € [4]

(Net price)

Data4Life Simcard - 10MB p/m for 30 years

JUSTWORX

$26.00 USD

Quantity

`1`

ADD TO CART

THE ONLY SIM CARD YOU'LL EVER NEED FOR YOUR IOT OR M2M PRODUCTS. 30 DAY MONEY-BACK GUARANTEE.

- Never pay for IoT or M2M data again.
- Effective rate of $0.006 per MB ($0.05p/m)
- No monthly fees. No subscriptions.
- No "Recharge Service" fee.
- Multi-Network in each country. Automatically connects to the strongest local signal.
- Ultra-Secure VPN's available.
- Perfect for Credit card terminals, POS systems, Alarm systems, GPS trackers, Cellular sensors and any other Cellular based product that uses M2M (machine to machine) technology.
- Coverage on over 205 networks in 105 countries.
- Works on 2G, 3G and 4G (LTE) networks.

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Impact of '$1 IoT'

+ Opportunities

More connections

- China currently has 0.35 cellular IoT connections per head of population. Rest of the world has 0.08.

- New opportunities for new use cases that aren't affordable at current rates.

- Switching to cellular vs WiFi, Bluetooth, Zigbee etc. More secure, out-of-the-box working, simpler provisioning.

− Risks

Less money

- USD15 billion market for value-added connectivity in 2020. A rapid decline towards $1/year will mean a static market.

- Solutions need to be an order of magnitude more scalable.

- Causes a retrenching to wholesale position for many CSPs.

- Jeopardises network investments, particularly NB-IoT.

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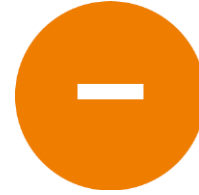
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Solution: Pivot to 'Hyperscale IoT Connectivity'

- Ensure that systems and technologies are aligned to deliver a highly streamlined and low-touch onboarding and connectivity management capability.

- The ability to support 10-100x the number of connections today.

- Seven categories identified. Used this in the CSP IoT Benchmarking report for ranking purposes...

Hyperscale IoT Connectivity capability
Source: Transforma Insights, 2021

Tier 1	**Efficient connectivity onboarding and management**	Scalability of the platforms and systems aimed at onboarding connections and managing them on the network.
	Global connectivity support	Strong footprint, with global partners and roaming agreements. Compliance with local regulation, policy management, troubleshooting, data transport and security features across the full footprint.
Tier 2	**Cloud integration**	Support for seamlessly delivering device data into a hyperscale cloud platform.
	Business organisation	Streamlined business processes and structures, appropriate for delivering cost-effective connectivity.
	Hyperscale access technologies	Support for a broad range of technologies that meet the specific needs of a wide range of use cases, e.g. LTE-M, NB-IoT, LoRaWAN, LEO satellite.
Tier 3	**Core network flexibility**	Ability to take advantage of network virtualisation, the disaggregation of networks from connectivity control, and associated capabilities.
	Hardware integration	Removing the complexity of optimising devices. Includes certification, pre-integration to IoT platforms, and device lifecycle management.

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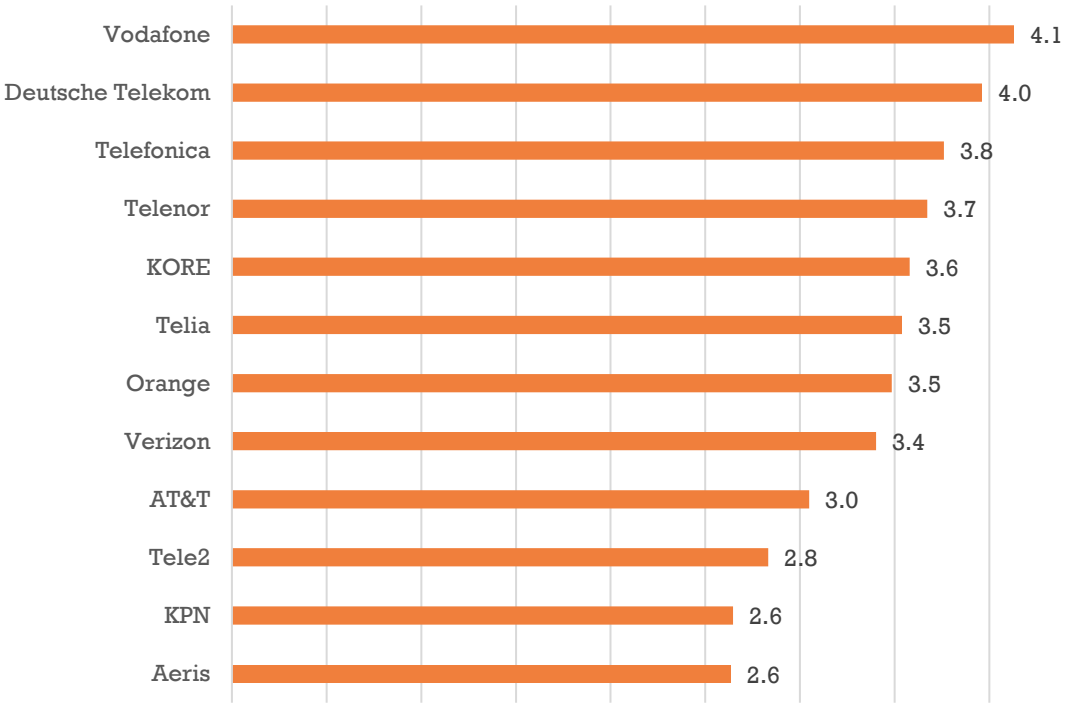
Hyperscale IoT Connectivity Provider capabilities

CSPs' Hyperscale IoT Connectivity Provider capabilities
Source: Transforma Insights, 2021

	Weight	1	2	3	4	5	6
Efficient connectivity onboarding		DT	Vodafone	Telia	Telenor	Verizon	Telefónica
Global connectivity support		Vodafone	DT	Telenor	Orange	KORE	Telefónica
Cloud integration		Verizon	Orange	Telefónica	DT	Telenor	Aeris
Business organisation		DT	KORE	Tele2	Aeris	Telia	Vodafone
Hyperscale access technologies		KPN	KORE	AT&T	Telefónica	Telia	Vodafone
Core network flexibility		Telefónica	Aeris	Telia	Telenor	Verizon	DT
Hardware integration		Verizon	KORE	Telefónica	Orange	AT&T	Vodafone
Overall	-	**Vodafone**	**DT**	**Telefónica**	**Telenor**	**KORE**	**Telia**

CSPs' Hyperscale IoT Connectivity Provider capabilities
Source: Transforma Insights, 2021

Provider	Score
Vodafone	4.1
Deutsche Telekom	4.0
Telefonica	3.8
Telenor	3.7
KORE	3.6
Telia	3.5
Orange	3.5
Verizon	3.4
AT&T	3.0
Tele2	2.8
KPN	2.6
Aeris	2.6

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Solution: Move 'up-the-stack'

Competition vs market share for IoT
Source: Transforma Insights, 2021

	Number of competitors	Share of market revenue	
Solution providers			Alarm.com, AWS, Big Belly Solar, Fleetmatics, Ingenico, John Deere, Smart Parking, Vodafone Automotive
Systems integrators			Accenture, CGI, HCL, IBM, Orange Business Services, DT/T-Systems, Tata Consultancy Services, Wipro
App enablement platforms			AWS, Clearblade, Ericsson, Fujitsu, IBM, Microsoft, Oracle, PTC Thingworx, SAP, Siemens
Connectivity providers			1NCE, Aeris Communications, AT&T, Deutsche Telekom, Orange, Orbcomm, Sierra Wireless, Sigfox, Telia, Vodafone
Connectivity platform			1NCE, AWS, Cisco Jasper, Ericsson, floLIVE, Sierra Wireless, Vodafone
Device OEMs			Amazon, Belkin, Google, Huawei, Itron, Nest, Netgear, Landis & Gyr, Philips, Samsung, Sierra Wireless
Chipsets and modules			Digi, Huawei, Intel, Nvidia, Qualcomm, Samsung, Semtech, Sierra Wireless, Thales, U-Blox

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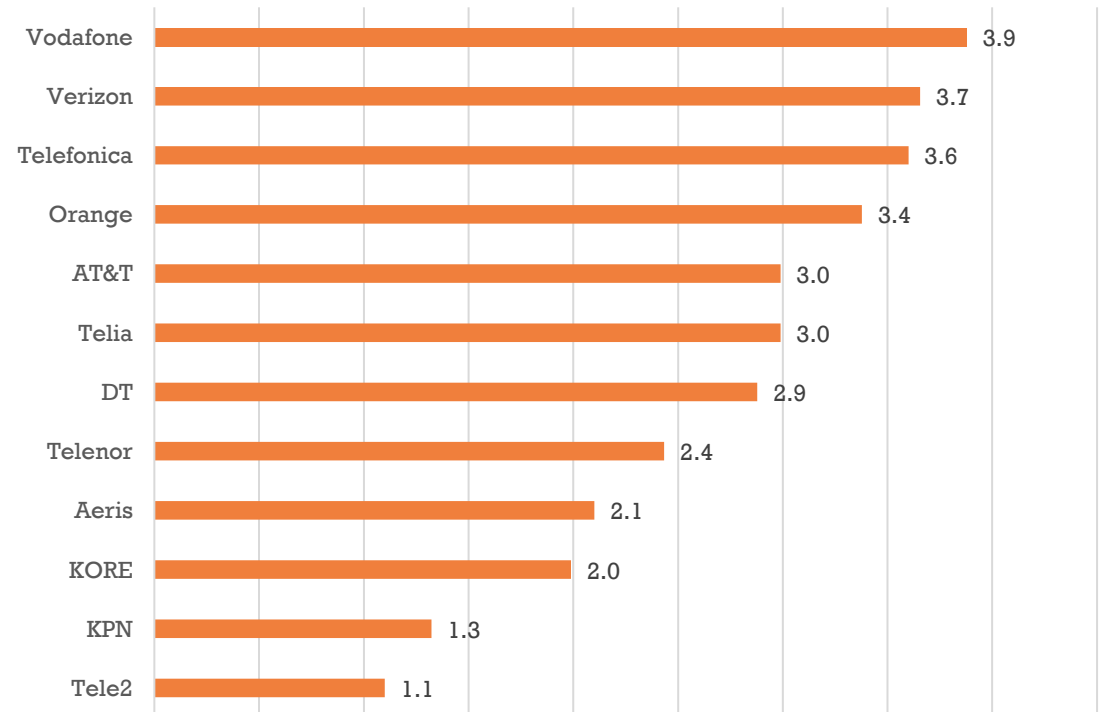AI   HMI   Edge   Robotics   Next Gen PLM   Future Tech

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Up-the-stack vertical solutions

- 50-70% of revenue sits with the solution vs 5-10% in connectivity.

- Certainly not a no-brainer though: fiercely competed

- Needs a sustainable differentiator, either from M&A or from long-term building of internal capabilities:
  - Vodafone in automotive (Cobra Automotive), fleet (Evotracking and Zellitron), industrial (Grandcentrix and IoT.nxt), agriculture (Mezzanine), and payment terminals (Xlink).
  - Verizon in fleet management based on the acquisitions of Fleetmatics, Telogis and Hughes Telematics.
  - KORE in healthcare through the acquisition of Integron.
  - Telia in transport through its acquisition of Fältcom.
  - Telefonica OnTheSpot.

- Refocus in 2020/21 towards smart buildings and industrial sectors.

CSPs' Vertical Solutions capabilities
Source: Transforma Insights, 2021

CSP	Value
Vodafone	3.9
Verizon	3.7
Telefonica	3.6
Orange	3.4
AT&T	3.0
Telia	3.0
DT	2.9
Telenor	2.4
Aeris	2.1
KORE	2.0
KPN	1.3
Tele2	1.1

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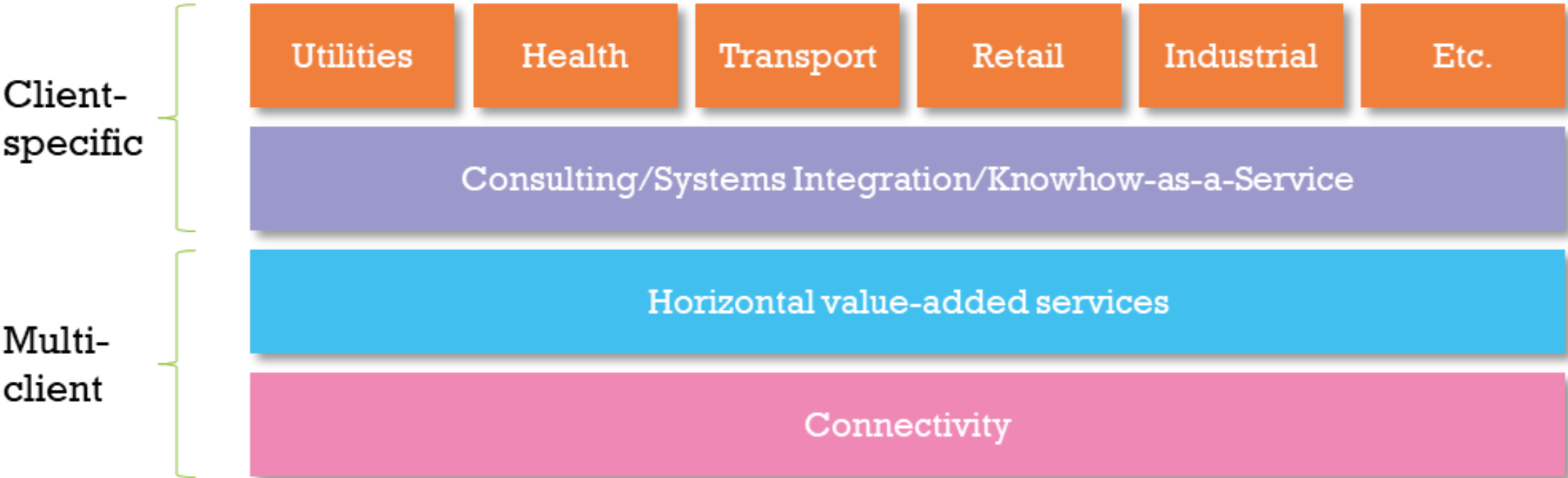
Solution: Layer on additional horizontal capabilities

Solution: Consolidation and/or retrenching

- **Consolidation**
  - Not an issue for MNOs – 2% of revenue from IoT (although may acquire MVNOs)
  - A significant tactic for MVNOs
    - KORE (Jazz Wireless Data, Mach Communications, Raco Wireless, Wyless
    - Sierra Wireless (Numerex, Wireless Maingate, M2M Group, Mobiquithings).
    - Wireless Logic (Arkessa, Com4, Data Mobile, Matooma, Things Mobile)

- **Retrenching**
  - MNO approach
  - Rethink of proposition towards a more wholesale-led approach
  - Lower revenue but zero risk
 - Lower investment in IoT-specific costs (most relevantly NB-IoT upgrades).
  - More on this later

Wholesale strategies

- Relationship with MVNOs is interesting to watch. Introduction of MRCs points to a clamping down. But other indications are of favouring some MVNOs like never before.

- Unfavoured MVNOs will struggle. Favoured will do well, benefiting from eSIM profiles, availability of full LPWA features (e.g. eDRX, PSM), wholesale data deals.

- KPN (Freeeway, KORE, Wireless Logic) and Tele2 (Cubic, CSL Group, Telit) are particularly active with MVNOs, although that does not prevent an active approach elsewhere.

- Some CSPs have opted for a retrenching towards more of a wholesale approach. Standard practice for smaller CSPs.

- [Chart on the right is from ongoing report on MVNOs, due for publication November 2021.]

Leading CSPs by MVNOs supported
Source: Transforma Insights, 2021
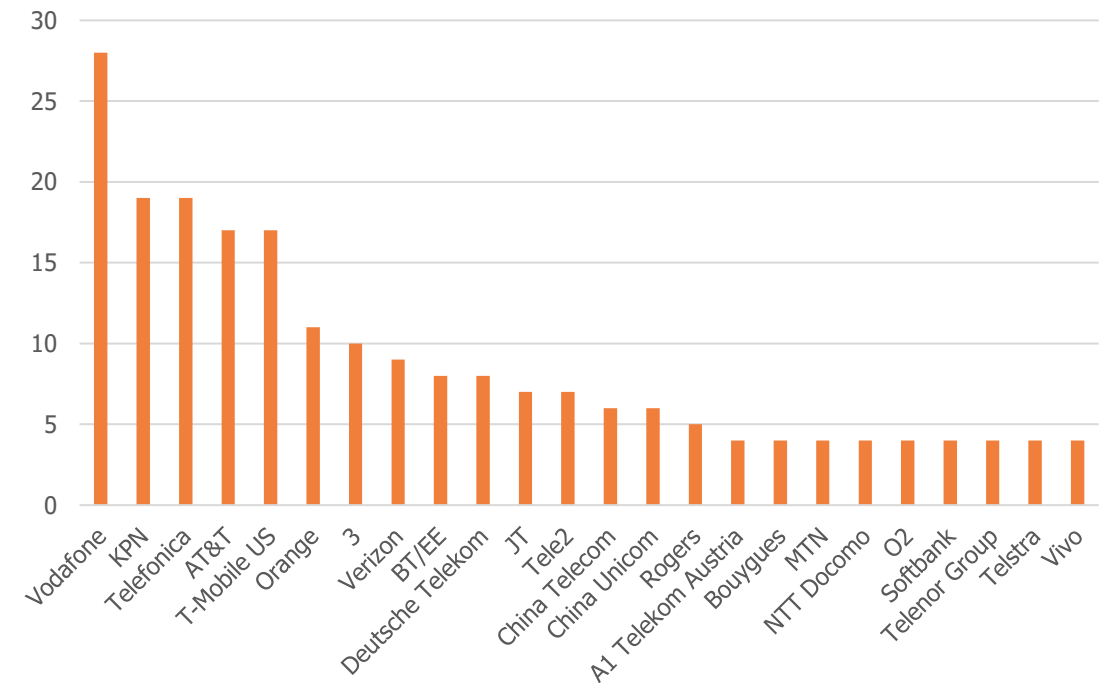
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CSP IoT Peer Benchmarking overall ranking

CSP ratings for Hyperscale IoT Connectivity capabilities vs client-specific horizontal and vertical solutions capabilities
Source: Transforma Insights, 2021

- Overall ranking against aptitude to be a 'Hyperscale IoT Connectivity Provider' sees Vodafone lead with DT, Telefonica and Telenor behind.

- Client-specific capabilities (i.e. combination of vertical solutions and horizontal consulting/advisory) has Orange and DT leading by virtue of SI/consulting expertise. Vodafone, Telefonica and Verizon follow.

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CSP Recommendations

Evolve connectivity management strategy for maximum flexibility to address both high-feature and low-cost ends of the spectrum.

Cloud-native is the best approach for how to deploy your connectivity platform. Plus virtualisation of core network.

Be prepared for limited roaming for NB-IoT and LTE-M (and LoRaWAN). Both might be a slower burn than previously expected, particularly given patchy upgrades.

Develop the 'Transport Layer Platform' (working name) - still nebulous, but includes policy management, data routing, security, compliance, etc. necessary for correctly supporting global solutions.

Have a refined strategy towards MVNOs. Friends? Foes? Categorisation?

Scalability and cloud integration are critical. Work on cloud connectors.

Build your hardware play. We anticipate that the share of the market going to integrated hardware/connectivity will grow.

Data analytics and data exchange are a slow burn and depend on large volumes. But worth exploring.

Know where you have a right to play in vertical solutions.

Adopt a highly tactical approach to addressing vertical expansion. Prices are sky high!

Develop the knowhow-as-a-service consulting-lite type capabilities, as scaled as possible.

Be prepared for a quite rapidly changing competitive environment. MVNOs, retrenching MNOs, etc.

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For next year

- Chinese operators are becoming more active globally.

- NTT/NTT Docomo/Transatel is an increasingly interesting combination. Ditto KDDI and Soracom.

- More MVNOs generally. It's a vibrant space at the moment and the next tier of global operators are mostly MVNOs.

- More explicit focus on the Hyperscale IoT Connectivity capabilities. That perspective came out of the findings. Next year we will plan to address those subjects directly.

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Access to the report

- The report is available to 'Corporate' level subscribers to Transforma Insights Advisory Service. It forms part of a stream of research on IoT connectivity including recent and forthcoming reports on price erosion, the IoT MVNO landscape, and the LEO satellite market.

- For further information on how to subscribe, contact sales@transformainsights.com.

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Coming soon highlights:

- IoT MVNO Market Guide (November 2021)

- Satellite IoT Market Study (December 2021)

- Industrial Digital Transformation Service Provider Benchmarking 2021 (December 2021)

- Data Exchange Market Study (January 2021)

- IoT Hardware Manufacturer Strategies for Connectivity (January 2021)

- IoT Module/Chipset Market Study (March 2021)

- Chinese Communications Service Provider Benchmarking (March 2021)

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