analysys mason

Netcracker: Digital OSS

Anil Rao and William Nagy

RESEARCH

Netcracker: strategy overview

Netcracker modernised and streamlined its entire solution portfolio with Netcracker 2020. Digital OSS is part of the Netcracker 2020 portfolio.

Netcracker has redesigned its portfolio to support the cloud delivery mechanisms and spending behaviour of communications service providers (CSPs) in the 5G, cloud-native era. Netcracker 2020 is a cloud-native, microservice-based suite with deployment options on public and private cloud in multi-cloud and hybrid-cloud scenarios. It uses SaaS and a DevOps approach to enable agile provisioning of the modularised components.

The portfolio is built using out-of-the-box components making it easy to pick and choose functionality. It uses open, standards-based architecture to reduce integration complexities. Netcracker 2020 also enhances its partner ecosystem enablement capabilities and emphasises B2B and B2B2X models. It provides end-to-end partner lifecycle management with portals for onboarding and service management. Its digital marketplace capabilities enable partners to provide 5G services and mobile edge computing (MEC) applications with multi-partner settlements.

It has a strong focus on end-to-end automation, enabled by ML/AI. Its comprehensive OSS and BSS portfolio enables it to offer automation at all stages of operation from sales to fulfilment and operations. This profile discusses Netcracker's Digital OSS solution portfolio.

Figure 1: Key data

Company details	Netcracker is a leading provider of OSS and BSS solutions. It is a wholly owned subsidiary of NEC and is headquartered in Waltham, MA – USA.
Revenue	NEC reported total revenue of USD28 billion in 2019. Netcracker's revenue is reported under various segments.
Key customers (Digital OSS)	A1 Telekom, Austria Group, Charter Communications, Deutsche Telekom, Etisalat, Movistar, T-Mobile, Telefónica, Telus, Turkcell, Singtel, Swisscom, Vivo, Vodafone
Partnerships	Alitostar, AWS, Casa Systems, Fortinet, Google Cloud, Intel, Juniper Networks, Microsoft Azure, Red Hat, Versa, VMware
Professional services, products and solutions	Netcracker's flagship solution Netcracker 2020 includes Digital OSS, Digital BSS, a full suite of professional services, a cloud platform and an advanced analytics platform.

Source: Analysys Mason

Netcracker: Digital OSS strategy overview

Netcracker's cloud-native Digital OSS suite encompasses service orchestration, SDN/NFV orchestration, assurance and resource and infrastructure management.

Netcracker's Digital OSS aims to address the major operational challenges that CSPs face. The portfolio enables cross-domain orchestration and domain level orchestration and automation for the core, transport network (IP/MPLS, optical, microwave) and the edge, including open vRAN and SD-WAN/LAN/Wi-Fi.

Digital OSS uses a model-driven orchestration engine to enable automation of network provisioning, configuration and full life-cycle management. Physical, virtual and cloud-native network functions and digital services are onboarded and orchestrated with service intent to optimise design and lifecycle management.

Netcracker bundles the individual microservice components of Digital OSS to provided specific solutions such as domain orchestration. The domain level orchestrators use Service Orchestration, Active Resource Inventory, Fault and Performance Management, NFV Orchestration, Configuration Management, Design & Onboarding modules from Digital OSS as well as the Advanced Analytics platform from the larger Netcracker 2020 portfolio.

End-to-end service orchestration and automation is achieved using a hierarchical architecture. The domain-level orchestrators are unified by an end-to-end service orchestrator.

Digital OSS provides solutions for new 5G-specific use cases such as MEC, network slicing and vRAN.

Digital OSS also adds new functionality specifically for mobile edge computing. It has support for end-to-end MEC application lifecycle management, traffic and service rules management. It also enables MEC host selection and optimal placement logic with hybrid distributed cloud management.

Network slicing use cases are enabled by specific add-ons for service design with configuration and lifecycle management as well as service and network orchestration with inventory and capacity management, which enables optimal resource utilisation and SLA management.

vRAN and Open RAN orchestration is supported by full life cycle management, Netcracker's partner ecosystem and model driven service provisioning and assurance. It is enabled by standards-based and open architecture.

Digital OSS complies with standards such as MEC010-2, SOL005 and SOL001 as defined by ETSI, TMF640/641 and TM Forum OpenAPIs. It also complies with management and orchestration service-based architecture defined by the 3GPP and MEF LSO and standards from OASIS.

Netcracker: Digital OSS analysis

Netcracker's Digital OSS enables the company to address CSPs' network and service orchestration needs, while allowing them to pick and choose the required functionality.

Netcracker's evolution from Netcracker 12 to Netcracker 2020 consolidates and streamlines its portfolio. Netcracker's primary focus was to consolidate seven NFV/SDN orchestration product segments into one segment. This simplification enables CSPs to get more functionality with fewer integrations, which aids CSPs migrating to a more lean operating model.

Netcracker's strong focus on evolution to the cloud and 5G positions it well as CSPs prepare for 5G and increasingly adopt cloud-based delivery of OSS products. Its microservice-based approach, combined with its DevOps strategy enables it to rapidly address CSP needs and the solution's open, standards-based architecture enables simple integration. It is positioned to take advantage of the gradual CSP adoption of the multi-cloud strategy by providing flexibility with cloud hosting and managed services over public/private cloud and on-premises.

The Digital OSS solution is complimented and enhanced by Netcracker's professional services portfolio. It provides a host of options for delivery, development and management, which makes the solution flexible depending on CSP preferences.

Figure 2: Key strengths and weaknesses

Strength	Description
Comprehensive portfolio	Netcracker Digital OSS focuses on end-to-end service orchestration across all OSS segments.
5G focus	The Digital OSS solution has been developed to support 5G use cases such as vRAN, MEC, network slicing and containerised environments as they become commercialised at scale.
Cloud native and modular	Digital OSS addresses CSPs' desire for cloud-ready solutions that can be deployed in both public and private cloud environments with minimal integration effort.

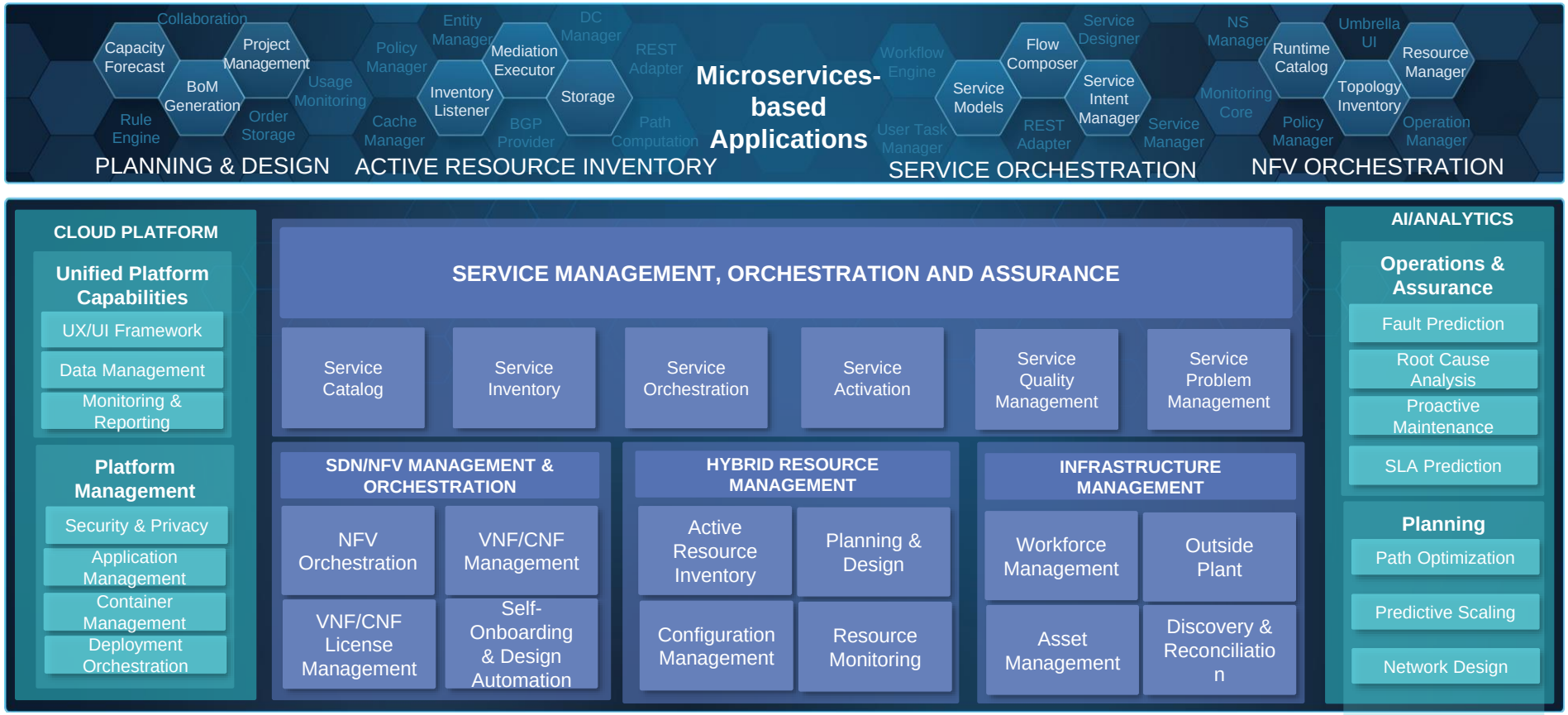
Weakness	Description
Slow cloud migration	CSP cloud migration is occurring slowly, particularly for OSS solutions. Netcracker's cloud focus will not pay off until cloud migration accelerates.
Increasing competition from NEPs	Netcracker faces strong competition from NEPs, such as Nokia and Ericsson, that have increased their investments in OSS, automation and ML/AI.

Source: Analysys Mason

Contents

Solution overview

Figure 3: Netcracker's Digital OSS overview



Solution summary

Figure 4: Netcracker Digital OSS solution summary

Product/Solution	Analysys Mason segment	Description
Digital OSS	Automated assurance (AA) Service design and orchestration (SDO) Network automation and orchestration (NAO)	Digital OSS is Netcracker's OSS suite of solutions under Netcracker 2020. The solution is microservice-based and cloud native, supporting SaaS-based delivery and hosted and managed services over public/private cloud and on-prem. It is built on open source architecture and is compliant with standards set by ETSI, 3GPP, MEF and TM Forum. It is comprised of four segments: • Service Management and Orchestration – contains products to activate and orchestrate services and manage service inventory. • SDN/NFV Management and Orchestration – contains products to onboard, manage and orchestrate VNFs, CNFs and associated licences as well as SDN orchestration and automation. • Hybrid Resource Management – contains products to manage network resources and services across physical, virtual and cloud infrastructure. • Infrastructure Management – contains products to manage physical assets including network, IT and personnel assets. Each segment contains modularised products with specific functionality to enable standalone deployments based on CSP needs. Products are also bundled to provide use case specific solutions. Digital OSS automates service, resource and network function onboarding and management using intent-based standard service models such as TOSCA and YANG. It supports domain orchestration for, and across the RAN, 5G core, broadband access, SD-WAN/LAN/Wi-Fi, MEC edge and IP/MPLS. It also has integrated functionality for network slice and eSIM management. It is a 'low code' platform, which enables CSPs to develop and co-develop custom functions with the DevOps approach Netcracker delivers the solution with. Netcracker also highlights the secureness of its solution, which has isolated environments, separated duties, access management controls and anonymisation.

Solution summary

Figure 5: Netcracker solution summary

Solution	Analysys Mason segment	Description
Active Resource Inventory	AA SDO NAO	Active Resource Inventory is Netcracker's real-time inventory solution. It provides a federated end-to-end view of the network, encompassing topology, services and resources across PNFs, VNF, CNFs and legacy inventory. It offers up-to-date capacity capabilities, automated resource assignment and real-time discovery and network synchronisation via protocols such as NETCONF, BGP-LS, LLDP and CLI.
Slice Management	AA SDO NAO	Netcracker's network slicing solution Slice Management enables slice orchestration across the access, transport and core networks. The solution is comprised of multiple Digital OSS components including Active Inventory, Service Orchestration, Network Orchestration, VNF Management, Configuration Management and Resource Monitoring, which are supported by slice specific functionality based on 3GPP standards.
vRAN Orchestration	AA SDO NAO	vRAN orchestration uses the domain orchestration modules from Digital OSS and sits on top of the vDU, vCU, and vEMS. It uses Netcracker's partner ecosystem for design and onboarding of virtual and cloud-native network functions. The vendor-agnostic solution enables end-to-end lifecycle management through model-driven service provisioning and assurance. Use cases include eNB auto commissioning, eNB and EMS auto upgrading and healing, eNB and EMS de-commissioning and moving eNBs between EMS instances.

Significant customers

Figure 6: Key deployments

Customer	Country	Scope
Turkcell	Turkey	Netcracker leveraged its Digital OSS suite to provide an OSS transformation to prepare Turkcell for 5G operations and digital services as well as decommission legacy systems more efficiently. The engagement began with deployment of IP/MPLS, broadband aggregation and passive optical networks. The OSS transformation includes migrating legacy network inventory management to modernised inventory management systems and auto-discovery and reconciliation. Joint DevOps is also utilised to implement changes based on network improvements.
Deutsche Telekom	Germany	Deutsche Telekom Germany selected Netcracker's Network Domain Orchestration solution to automate cross domain network discovery, traffic optimisation, IP and optical backbone network provisioning and multi-vendor network orchestration. The solution integrates IP devices and Optical SDN controllers from multiple different hardware vendors and enables Deutsche Telekom to automate service provisioning and reduce associated costs.
A1 Telekom Austria Group	Bulgaria, Croatia, Serbia and Slovenia	A1 Telekom Austria Group leveraged Netcracker's cloud-based Resource Inventory, Workflow Management, Discovery and Reconciliation and Network Planning and Design solutions to modernise its inventory management systems across its CEE operations. The modernisation project enabled faster delivery, increased visibility and consistency for new services.
Telus	Canada	Netcracker provided Telus with self-service orchestration and order management solutions to enable the CSP to launch software-driven network-as-a-service for enterprises in hybrid environments.
Swisscom	Switzerland	Netcracker and Swisscom engaged in joint agile DevOps with CI/CD processes to transform the CSP's operational model, enabling it to create and deliver new services more rapidly and reduce operational expenditure on design processes.
Vodafone Group	Global	Netcracker enabled a group-wide cloud transformation for Vodafone using its Hybrid Operations Management solution. The partnership works to modernise operational systems using cloud-native, NFV and SDN technologies to turn Vodafone into a cloud provider.
Etisalat	United Arab Emirates	Netcracker provided end-to-end NFV orchestration and automation as well as operational tools for Etisalat's multivendor telco cloud program. This included virtualised access for consumers and enterprises and self-service onboarding automation.

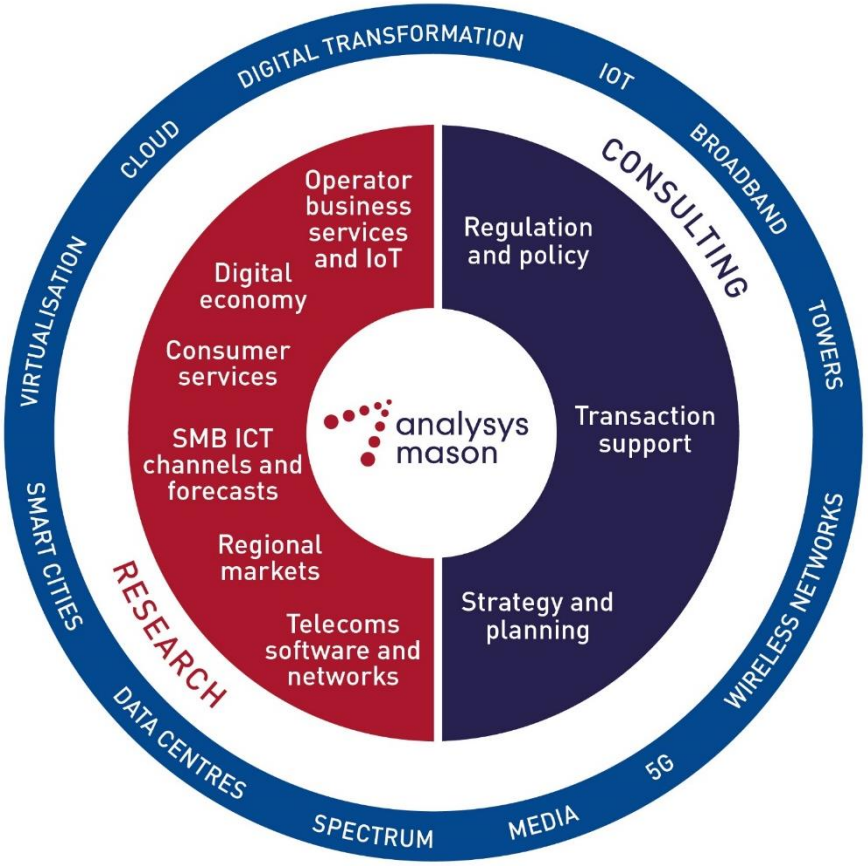
About the authors

Anil Rao (Principal Analyst) is the lead analyst for the Automated Assurance and Service Design and Orchestration research programmes, covering a broad range of topics on the existing and new-age operational systems that will power operators' digital transformations. His main areas of focus include service creation, provisioning and service operations in NFV/SDN-based networks, 5G, IoT and edge clouds; the use of analytics, ML and AI to increase operations efficiency and agility; and the broader imperatives around operations automation and zero touch networks. In addition to producing both quantitative and qualitative research for both programmes, Anil also works with clients on a range of consulting engagements such as strategy assessment and advisory, market sizing, competitive analysis and market positioning, and marketing support through thought leadership collateral.

William Nagy (Analyst) is a member of the *Telecoms Software and Networks* research team in London, contributing to various research programmes with a focus on *Automated Assurance*, *Service Design and Orchestration* and *Forecast and Strategy*. He previously worked with the regional markets team. William holds a BSc in Physics from Queen Mary University of London.

Analysys Mason's consulting and research are uniquely positioned

Analysys Mason's consulting services and research portfolio



CONSULTING

We deliver tangible benefits to clients across the telecoms industry:

- communications and digital service providers, vendors, financial and strategic investors, private equity and infrastructure funds, governments, regulators, broadcasters, and service and content providers.

Our sector specialists understand the distinct local challenges facing clients, in addition to the wider effects of global forces.

We are future-focused and help clients understand the challenges and opportunities that new technology brings.

RESEARCH

Our dedicated team of analysts track and forecast the different services accessed by consumers and enterprises.

We offer detailed insight into the software, infrastructure and technology delivering those services.

Clients benefit from regular and timely intelligence, and direct access to analysts.

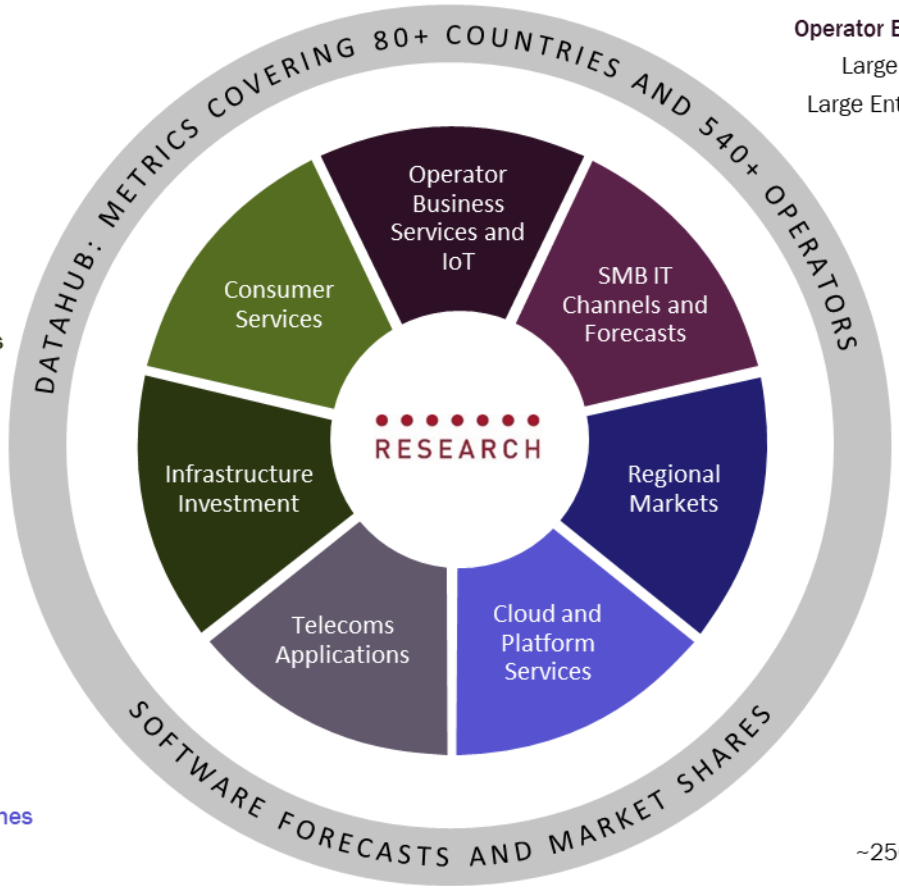
Research from Analysys Mason

Consumer Services programmes
Fixed Broadband Services
Mobile Services
Fixed–Mobile Convergence
Smart Devices
Future Comms
Video, Gaming and Entertainment
Digital Services

Infrastructure Investment programmes
Wireless Infrastructure
Fibre Infrastructure
Operator Investment Strategies

Telecoms Applications programmes
Customer Engagement
Monetisation Platforms
Digital Experience
Automated Assurance
Service Design and Orchestration
Network Automation and Orchestration
Next-Generation Wireless Networks

Cloud and Platform Services programmes
Cloud Infrastructure Strategies
Data, AI and Development Platforms
Media Platforms



analysysmason.com/services/research

Operator Business Services and IoT programmes
Large Enterprise Voice and Data Connectivity
Large Enterprise Emerging Service Opportunities
SME Strategies
IoT and M2M Services
IoT Platforms and Technology

SMB IT Channels and Forecasts programmes
Cyber Security

Regional Markets programmes
Global Telecoms Data
Americas
Asia–Pacific
Middle East and Africa
European Core Forecasts
European Telecoms Market Matrix
European Country Reports

DataHub
~2500 forecast and 250+ historical metrics
Regional results and worldwide totals
Operator historical data

analysys mason

Consulting from Analysys Mason

Regulation and policy

Policy development and response

Ex-ante market reviews, remedies, costing...

Universal Service Obligation (USO)

Scarce resources: radio spectrum management, auction support, numbering...

Ex-post / abuse of dominance

Postal sector

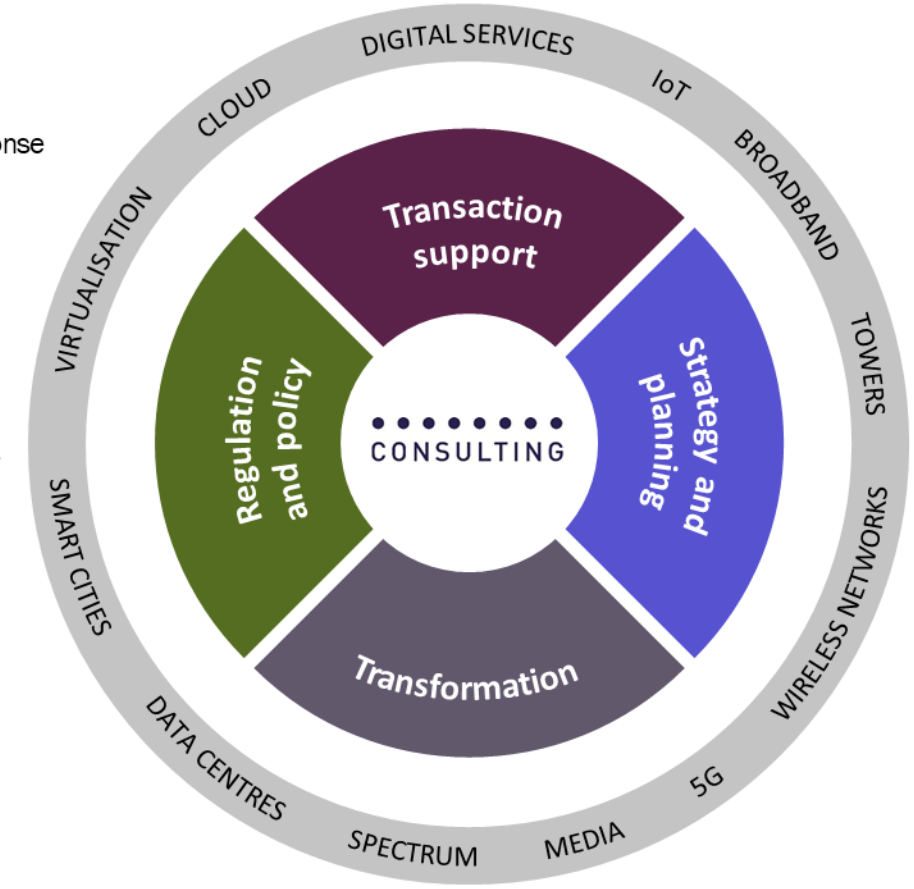
Transformation

Transformation programmes

Assurance

Implementation

Delivery



Transaction support

Commercial and technical due diligence, buy-side and sell-side

Initial public offerings (IPOs)

Financial valuation

Debt financing

Lending technical advisory

Opportunity scouting

Business plan review

Strategy and planning

Commercial expertise

Technology optimisation

New digital frontiers

analysysmason.com/services/consulting

analysys mason

PUBLISHED BY ANALYSYS MASON LIMITED IN **October 2020**

Bush House • North West Wing • Aldwych • London • WC2B 4PJ • UK

Tel: +44 (0)20 7395 9000 • Email: research@analysysmason.com • www.analysysmason.com/research • Registered in England and Wales No. 5177472