



# Software for the Connected World

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SOFTWARE IS REVOLUTIONIZING TELECOM—AND OTHER SECTORS

APRIL 2022 | EXECUTIVE SUMMARY

*FOR THE FULL REPORT, PLEASE CONTACT WILL COOPER ([WCOOPER@HL.COM](mailto:wcooper@hl.com))*

# Communications Services Providers Are at a Critical Juncture

## Situation Overview

- Commoditization of legacy offerings (voice and data) has **eroded core revenue** streams; telcos are **competing on price and connectivity**.
- As such, highly **capital intensive network** refresh cycles have begun, with capex expected to double from \$30 billion to \$60 billion between 2020 and 2022, forcing telcos to find a way to **make the economics actually work**.
- Talent has become **such an issue** that everything related to the customer experience **must be perfect**.
- Telcos are oftentimes operating their businesses on **decades-old** software ecosystems, consisting of **500+** siloed apps.
- Some carriers are attempting to **solve for growth** via M&A. In the U.S., Sprint, and T-Mobile; in Europe, carriers are lobbying for consolidation to improve cash flows ahead of large-scale 5G network rollouts.
- Software is key to telecom's future, and **hundreds of billions of dollars** will be required to make that transition.

## Market Activity

- The software market is large (**~\$100 billion**), growing (**~10% YoY**), primed for consolidation (**400+ vendors**), and attracting new capital.
- Today, much of the innovation is coming from within the **long tail of vendors**, many of which need capital to grow. Many players anticipate innovation to further accelerate with consolidation. Recent and notable events include:
  - **VC**
    - \$200M Series D of **Nova Labs**, creators of the open-source blockchain-based Helium Network, led by **Tiger Global** (Mar '22).
    - \$60M Series C of **Celona**, a 5G LAN network automation software, led by **DigitalBridge** (Mar '22).
    - \$46M Series D of **Cohere Technologies**, a universal open RAN spectrum multiplier, led by **Koch** (Feb '22).
    - \$58M Series D of **Federated Wireless**, a wireless solutions provider, led by **Cerberus Capital Management** (Feb '22).
    - \$12M growth raise of **VETRO**, a GIS mapping and fiber management software, led by **Resolve Growth Partners** (Jun '21).
    - \$12M Series B of **Connectbase**, a software-based telecom infrastructure marketplace, led by **Harbert Growth Partners** (Mar '21).
  - **PE**
    - **H.I.G.'s** acquisition of **Mobileum**, a telco roaming, security, and risk management analytics software provider (Jan '22).
    - **Francisco Partners'** \$50M debt investment into **MATRIX Software**, a 5G monetization software provider (Oct '21).
    - **Koch's** \$500M minority equity investment in **Mavenir**, an end-to-end 5G network automation software provider (Apr '21).
    - **H.I.G.'s** \$42M growth investment in **Sitetracker**, an asset and project management software provider (Jan '21).
  - **Strat**
    - **Rakuten Symphony's** acquisition of **Robin.io**, a provider of storage solutions and network applications (Feb '22).
    - **Tucows'** launch of **Wavelo**, a software platform for provisioning services and billing/subscription tools (Jan '22).
    - **Oracle's** acquisition of **Federos**, an AI-optimized network assurance, analytics, and automation software provider (Dec '21).

## Outlook

- Virtual networks and **cloud-based point solutions** that **scale limitlessly** and **unlock new revenue streams** will play a **fundamental role** in the deployment and enablement of 5G networks.
- Global mobile data traffic is growing at **~30% YoY**, making network management and monetization software increasingly critical to telcos; AT&T expects a fivefold increase in data on its network within the next five years.
- Vendors will increasingly seek to carry these solutions into **adjacent markets** (e.g., energy, IT services, media, healthcare, and IoT).
- Most vendors that Houlihan Lokey spoke to have M&A or capital-raising plans; our impression is that **almost no one is standing still**.

# Software Is Key to Telecom's Future

Challenges to the traditional telco model have **compounded** over recent years; now, telcos are being **forced to revamp** traditional monetization mechanisms and underlying operating models.

## Key Points

- Telcos have historically been laggards with regard to innovation.
  - E.g., many existing software ecosystems are in legacy, on-prem infrastructure.
- Telcos have now reached a point where they **must innovate**.
  - Networks are larger, costlier, and more complex than ever and need to be managed.
- A wide range of software solutions have emerged in response.
- Digital transformation opportunities that we saw years ago in other sectors are now present here.

## Telcos' Primary Challenges

Core Revenue Erosion

Increased Capital Intensity

Skilled Labor Shortage

Outdated Software Systems

## Software Vendor Responses

Cloud-Native, Highly Scalable Point Solutions

Shift From Service-Led to Product-Led Approach

Enhanced Go-to-Market Strategies

Accelerated Capital Formation

# An Ecosystem of 400+ Software Vendors Has Developed

Software provides critical tools to telcos in managing customers, billing + monetization, order provisioning and the network itself.

	Software for a range of business needs...	...managing a wide variety of functions...	...ultimately enabling organizational agility and unlocking new revenue streams
Customer-Facing	<b>Sales and Marketing</b>	<ul style="list-style-type: none"> <li>Channel Management</li> <li>Marketing Automation</li> </ul>	
	<b>Product Management</b>	<ul style="list-style-type: none"> <li>Data and Product Management</li> <li>Product Cataloging</li> </ul>	
	<b>Customer Lifecycle Management</b>	<ul style="list-style-type: none"> <li>Customer and Subscriber Management</li> <li>Churn Intelligence</li> </ul>	
	<b>Billing and Monetization</b>	<ul style="list-style-type: none"> <li>Billing, Rating and Charging</li> <li>Customer Order and SLA Management</li> </ul>	
	<b>Workflow Management</b>	<ul style="list-style-type: none"> <li>Process / Workflow Management</li> <li>Automation</li> </ul>	
	<b>Project Management</b>	<ul style="list-style-type: none"> <li>Infra and Field Service Management</li> <li>Mapping / Networking Design</li> </ul>	
	<b>Partner Management</b>	<ul style="list-style-type: none"> <li>Supplier Management</li> <li>Carrier Interconnect and Network Interfaces</li> </ul>	
	<b>Network Provisioning</b>	<ul style="list-style-type: none"> <li>Network Planning and Orchestration</li> <li>Customer Order Fulfillment</li> </ul>	
	<b>Service Management</b>	<ul style="list-style-type: none"> <li>Service Automation and Monitoring</li> <li>Order Management</li> </ul>	
	Network / Ops-Facing	<b>Network Management</b>	<ul style="list-style-type: none"> <li>Network Observability and Automation</li> <li>Network Data and Analytics</li> </ul>
<b>Resource / Inventory Management</b>		<ul style="list-style-type: none"> <li>Traffic Control and Shaping</li> <li>Network Inventory and Mapping</li> </ul>	
<b>Mobile Core</b>		<ul style="list-style-type: none"> <li>Performance Management and Automation</li> <li>Private 5G Networks</li> </ul>	

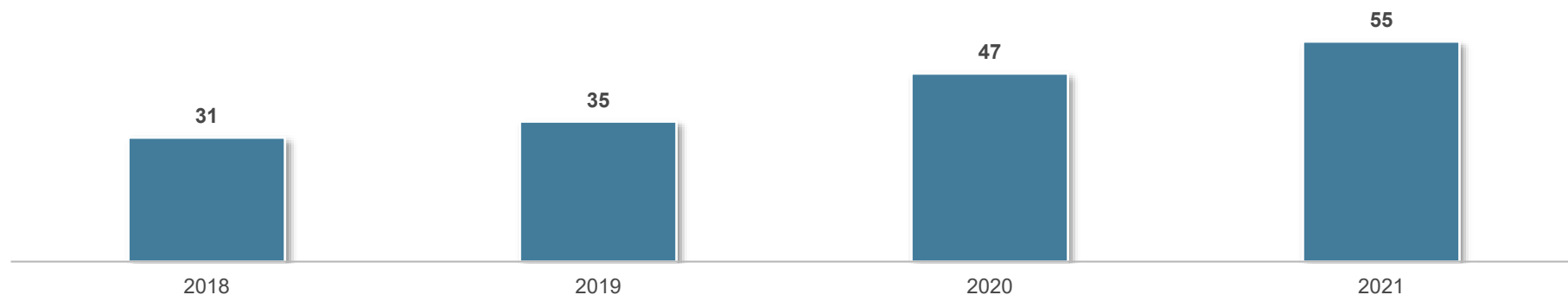
Notes: Representative illustration of players in the market; many vendors have offerings that span various sections of the overall stack. See the following subsector deep dives for additional players in the market.

□ Incumbents

▣ Challengers

# Sponsor-Driven Activity Is Picking Up

## Sponsor-Driven Deals Over the Years



## Select Recent PE and VC Investments

- Sponsors are making sizeable investments in the space, and many have made their second investments.
- Legacy, on-prem software vendors generally trade from 2x to 3x rev. due to large services components and narrower margins.
- SaaS-based businesses generally trade from 5x to 10x rev. (and oftentimes north of 10x).

Target	Investor	Date	Deal Value (\$M)	Description
celona	DIGITALBRIDGE	Mar. 2022	\$60	5G LAN network automation.
TIGERGLOBAL	TIGERGLOBAL	Mar. 2022	\$200	CBRS-based 5G wireless network on a blockchain.
cohere technologies	KOCH	Feb. 2022	\$46	Spectrum multiplier software.
fw	cerberus	Feb. 2022	\$58	Shared spectrum and CBRS technology.
mobileum	H.I.G. CAPITAL	Jan. 2022	~\$1,000	Telecom analytics software.
gluware	BainCapital	Oct. 2021	\$43	Intelligent network automation software.

Target	Investor	Date	Deal Value (\$M)	Description
kentik	THIRD POINT VENTURES	Oct. 2021	\$56	Network intelligence and optimization.
MATRIXIX SOFTWARE	FP PARTNERS	Oct. 2021	\$50	5G monetization software.
VETRO	RESOLVE	June 2021	\$12	Fiber mapping and management software.
MAVENIR	KOCH	Apr. 2021	\$500	Network core and RAN software.
Connectbase	HMC Capital Management	Mar. 2021	\$12	Software-based marketplace for telco infra.
SITETRACKER	H.I.G. CAPITAL	Jan. 2021	\$42	FSM/asset management software.

Sources: Industry research and estimates, Pitchbook.com and other publicly available information.

# Telecom Software Coverage Team

Houlihan Lokey has built a coverage team consisting of experts from software and telecom backgrounds.



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