Cognizant Speaker Session for GWF 2026 – Rama Mulukutla

Utilities Telecom

Date: 30 April 2026
4:30 pm - 5:30pm

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intuition engineered

Rama Mulukutla, PhD

AVP - Practice Leader at Cognizant

Location Based Services (LBS)/GIS Expert

Industry professional with 28+ years of experience. Specialties: Program Management, project management, Agile and Scrum development, Base map creation, remote sensing, GIS application development, integration of GIS with Business Intelligence tools and data warehouses, GPS enabled solutions, New Product development.

Industry Key Trends — Market Sizing Summary

5G Expansion & Open RAN

~85%

US 5G mobile subs by 2030

Open RAN projected at 15–20% of deployments by 2026

AI & Automation

$3.76B

AI in telecom market (2026)

Predictive maintenance cuts network downtime by up to 40%

Edge Computing & IoT

$11.6B

Telco MEC spend by 2027

NA holds 43%+ of global edge computing market by 2035

Cloud-Native & APIs

$182B

Telco cloud market by 2035

Telecom API market projected at ~$827B by 2030

Cybersecurity

$76.7B

Telecom cyber market by 2030

14.2% CAGR; NA leads quantum cryptography investment

Sustainability

20%

RAN energy savings via AI

Renewables now ~30% of total telco energy consumption

CX & Personalization

$100M

Added annual revenue via AI/ML

55M personalized offers generated at one major operator

Fiber & Broadband

56.5%

US households passed by fiber

Accelerated investment targeting underserved areas

Outlook for IT Services in Telecom — 2026 and Beyond

01

Agentic AI for Telco Ops

- Autonomous network management, NOC prioritization
- Real-time telemetry & service health analysis
- Telco-specific LLM/SLM agents for mission-critical workflows

02

End-to-End Automation

- Closed-loop assurance, zero-touch provisioning
- AI, RPA & orchestration across customer ops
- API-led OSS/BSS integration for legacy systems

03

Satellite & NTN

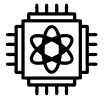
- LEO/MEO integration for rural & underserved coverage
- D2D connectivity, hybrid disaster-resilient backhaul
- IT opportunities in integration, security & analytics

04

6G Evolution

- Future-ready architecture & terahertz spectrum validation
- Digital twins, immersive experiences, AI-native networks
- 5G-to-6G migration & interoperability consulting

05



Quantum-Secure Infra

- Post-quantum encryption & QKD model design
- Identity & access management modernization
- Regulatory compliance & quantum security embedding

06

Platform Monetization

- Programmable interfaces: slicing, location intelligence
- Edge computing for manufacturing, mobility, healthcare
- DevOps, microservices & multi-cloud orchestration

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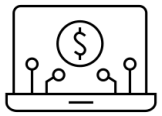
Examples of Telecom industry-specific solutions



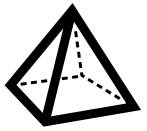
IT and Telecom
(Market Size: ~$2.8 Trillion by 2030)

Locating users' position and movement to plan 5G rollout, location-based advertising

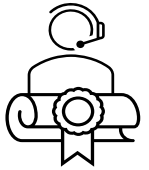
5G Signal propagation plans using 3D data

Small cell placement for high-band using line of sight analysis

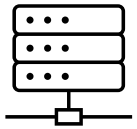
RF Models using high-resolution imagery and DSM/DTM models



Urban canyon / Canopy 3D models



Telecom certification areas by provider



Utility assets and cell tower data

Several of these capabilities built with partnership with leading industry telecom providers

Cognizant Field Ops Services for Telecom Industry (1/2)

20+ Yrs.

~3,435 Cities Covered

65+ Countries

4,500+ Field Operators

3000+ Devices handled

30+ Engaged Partners Globally

Inventory Management

1. **E2E Inventory Management** through automated platform, including Logistics & Compliance, Troubleshooting of installed equipment & software in field
2. **Inventory management tool for accurate planning and real time updates**
3. **Liaison** with local warehousing and transportation suppliers to support operations globally

Fleet Management

1. **Fleet Management:** Vehicle Acquisition**,** Scheduling and dispatching, Triaging, etc.
2. **Pre-shipment research and pre-checks of equipment**
3. 10+ programs involving field-based data collection while tracking and co-ordination of agents on field
4. **Field operations support** encompassing mechanical, electrical, software solutions and rectify vehicles on ground

Support Services

Desk Operations

1. Address **customer queries, remote troubleshooting, telecom hardware and software upgrades, tech support.**
2. Dedicated POCs for different workflows accountable for daily operation
3. **Proactive customer service** encompassing downtime alerts, routine maintenance checks, scheduling equipment replacement requests, etc.
4. Help create dashboards for all workflows.

Field Operations

1. **Hardware Equipment Assembly** and **Installation** like routers, modems, network ports
2. **Repair, refurbishment and replacement** of hardware equipment.
3. Modify and distribute documentation for all hardware equipment.
4. **Field Device Testing** to optimize network accuracy and downtime.

Components of Field Services

People Management
Training | Performance Management

Operations Management
Market Planning | Metrics | Execution Management | Delivery | Governance | Inventory & Logistics

Commercial Controllership
Labor Cost | Expenses on Field Budgets | Travel & Logistics Cost

Risk and Compliance
Risk Management Office| Safety Compliance | Early Warning System | Incident Management

Relevant Field Ops Services for Telecom Industry (2/2)

Managed Services

Standardized menu of services with SLA-based governance

- **Data collect programs:** New data collection, information validation
- **Below-the-line activation campaigns:** sales / mystery shopping
- **Projects with Core-Flex requirements:** requiring part timers | *Market launches @ 4 to 6 wks.*
- **KPIs:** Productivity, Accuracy, Throughput, TAT, cost per collect

Incubation & Delivery Playbook

For fail fast, high speed, experimental projects

- **Skilling on data traces for new devices:** IOT, wearables
- **On demand staffing** experience with executing multiple projects managing volume fluctuations
- **Feature test checklist:** product beta launch, inter-operability across devices and platforms

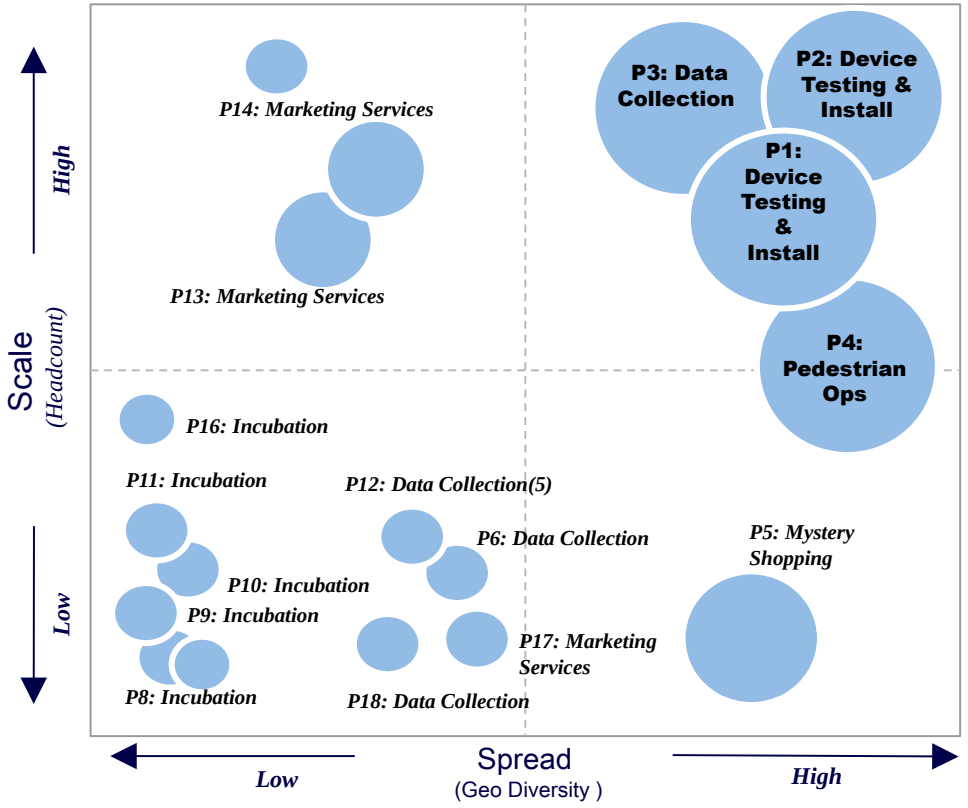
Asset Based Delivery

Investments in tech and analytics to drive outcomes

- **Field force enablement:** task management, knowledge updates, time tracking
- **Mgmt. support:** route planning, task allocation, data standardization
- **Policy enforcement:** expense mgmt., anomaly detection, risk mgmt.

Incubation - Validation - Global Scale...

10Low Scale -Low Spread | 3 High Scale x Low Spread |4 High Scale x High Spread | 1 Low Scale x High Spread



Outcomes Delivered

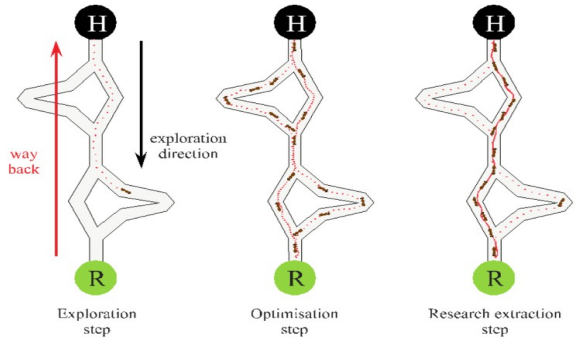
- **30%** Productivity Gains
- **<2%** Error Rate
- **45%** T&E Savings
- **40%+** TCO Reduction
- **4-8 weeks** New Launches – Scale upscale down
- **100%** Compliance

Case Study 1: Routing Optimization Tool - Smarter Routes, Maximize Productivity, & Minimize Travel Time

Challenge we solved

Lacking detailed road segment data makes it difficult to **select efficient routes**, leading to **wasted time and fuel**, and **reducing the team's task completion capacity**

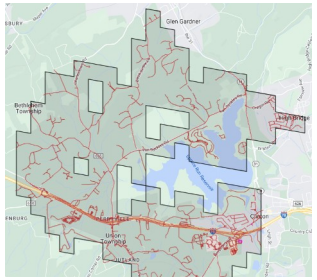
Ant Colony Optimization



Our solution/innovation

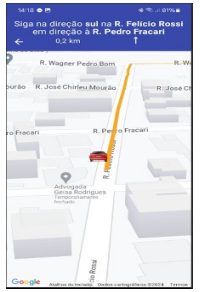
Route optimization: Strategically finding the most efficient way to connect multiple points

Advanced Algorithms: Leveraging data to determine the shortest, fastest, or most cost-effective path for your field teams



Fetch **the list of road segments** from Public APIs

Based on ant colony optimization theory tool will arrive at the **optimal route for a given hub**



Driver will **follow optimal route** created by the ML model

Benefits Delivered

~3-4%
Productivity Improvement

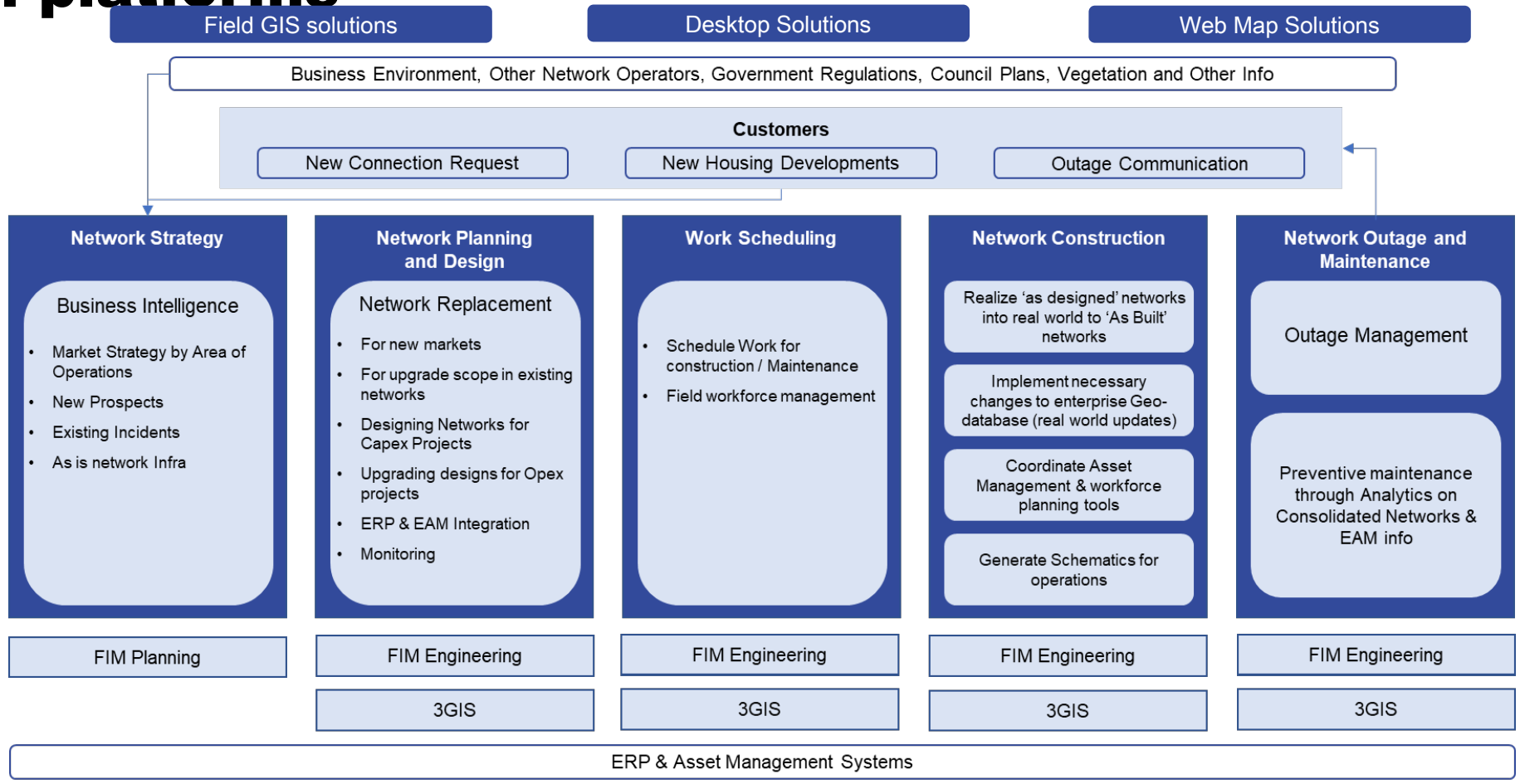
4% ↓
in downtime through avoiding inaccessible routes/traffic

12% ↓
in travel time by identifying short routes

Case Study 2: 10+ years engagement with NA Telecom and Data migration platforms

Technical Stack

- ESRI ArcGIS Server and ArcGIS Pro
- ArcGIS JavaScript API & Google Maps API
- ArcScene for 3-D view
- 3GIS
- Oracle Spatial
- Mongo DB
- FME & ArcPy
- AngularJS, Angular 8, Node.js
- Bentley Map and Bentley Microstation



Activities Performed

GIS Data Migration | Platform Migration | FIM Implementation | ESRI Upgrade | 3GIS Implementation | 3GIS Migration

Thank you

Telecom Technology Trends (1/2)

Network Virtualization, AI/ML, Edge and Quantum Computing have gained traction recently

These technologies will continue to transform telcos in coming years

5G Expansion and 6G Services Development

- **5G networks are expanding**, focusing on ultra-dense device connectivity, private networks, and improved performance through network slicing, revolutionizing education and entertainment with enhanced connectivity and low latency
- **6G services are in already early development.** The Next G Alliance aims to advance wireless technology leadership with a 6G roadmap focusing on trust, security, resilience, cost efficiency, enhanced digital experiences, & sustainability

Network Virtualization and Dis-aggregation

- **SDN** (Software Defined Networking) and **NFV** (Network Functions Virtualization) enable agile, cost-effective, and secure networks, optimizing 5G infra and integrating IoT and AI applications
- **NFV is used to separate network functions** from proprietary hardware, enabling rapid and cost-effective service introduction. SDN is utilized for simpler network management, reduced costs, faster service deployment, better traffic management, and improved scalability
- **Telcos have partnered to accelerate network disaggregation**, reduce costs, and automate ecosystems, aiming to create a flexible supply chain and support high-quality connectivity

Telecom Technology Trends (2/2)

AI/GenAI Deployment

- **Use of GenAI/Agentic AI** to enhance operational efficiency and customer experience. GenAI aids in network optimization, predictive maintenance, virtual call center agents, and field technician support
- A 2025 Google Cloud study (based on 489 telecom leaders) reveals **that 56% are actively running AI agents in production; 43% have deployed 10 or more**, and 20% have deeply embedded these agents across operations.

Edge Computing and Private Networks

- **Edge computing in NA's telecom market is rapidly growing**, expected to reach $52.97 billion by 2028 with applications in smart cities, healthcare, and manufacturing. Private networks, including LTE and 5G, are expanding, projected to grow at a CAGR of 25.8% from 2023 to 2030, driven by IoT and smart cities.
- Several companies are **integrating edge computing to support AR/VR** and have also introduced private 5G networks for industrial automation and logistics

Quantum Computing

- **Quantum computing** enhances network operations, enables quantum-resistant cryptography for improved security, supports predictive maintenance, and boosts low-latency communications
- **Photonic quantum computing** is used to significantly enhance network security and optimize routing

Key Company Initiatives Across Trend Areas

5G & Open RAN

- AT&T: Fiber deal, 5-yr Open RAN with Ericsson
- T-Mobile: 2.5 GHz activation, FWA expansion
- Verizon: $97.9M 5G in Austin, Frontier acq.

AI & Automation

- Cisco: $1B AI investment fund
- EY: AI telecom agents with NVIDIA
- SK Telecom: AI assistant ‘Aster’ US launch

Edge & IoT

- Verizon: IoT connectivity with Telenor
- Amdocs: IoT monetization with Airtel

Cloud & APIs

- Ericsson: Unified API platforms for 5G/IoT
- Dell: Open RAN cloud with Ericsson

Cybersecurity

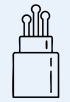
- Juniper: Quantum-safe with Quantum Bridge
- Cisco: AI cyber defense for du Telecom

Sustainability

- AT&T & Verizon: Energy-efficient upgrades
- Charter: DOCSIS 4.0 energy-efficient broadband

CX & Personalization

- MCE Systems: Digital device lifecycle mgmt
- Prodapt: AI-driven digital service lifecycle



Fiber & Broadband

- AT&T & Verizon: Major fiber rollouts
- Rogers: 5G cable infra with CableLabs
- Charter: DOCSIS 4.0 with Harmonic