

RADCOM

Assure. Launch. Connect.

Enabling telecom operators to monitor and optimize their networks smartly, ensure top-quality service quality, and deliver a superior customer experience with next-generation service assurance. Ushering in a new, assurance paradigm driven by AI-powered network intelligence, automation and cloud-native efficiency.



RADCOM

COMPANY



30 years
of telecom expertise

Publicly traded
since 1997 (RDCM)

Headquarters:
Israel

North America
Headquarters:
Paramus, NJ

Offices and
Technology Centers in
Brazil, India, and
Romania

SOLUTION



Automated assurance solutions with AI/ML-driven insights to ensure a superior customer experience



Real-time subscriber analytics and advanced troubleshooting to ensure mobile (2G-5G) and fixed service quality



Cloud-native solution with no hardware dependencies for efficient scaling, high availability and automation.



Rapid product development and cloud-agnostic for multiple cloud deployments (public, private and hybrid)

INNOVATION AWARDS

BEST NEW 5G CORE PRODUCT



OTHER CATEGORIES



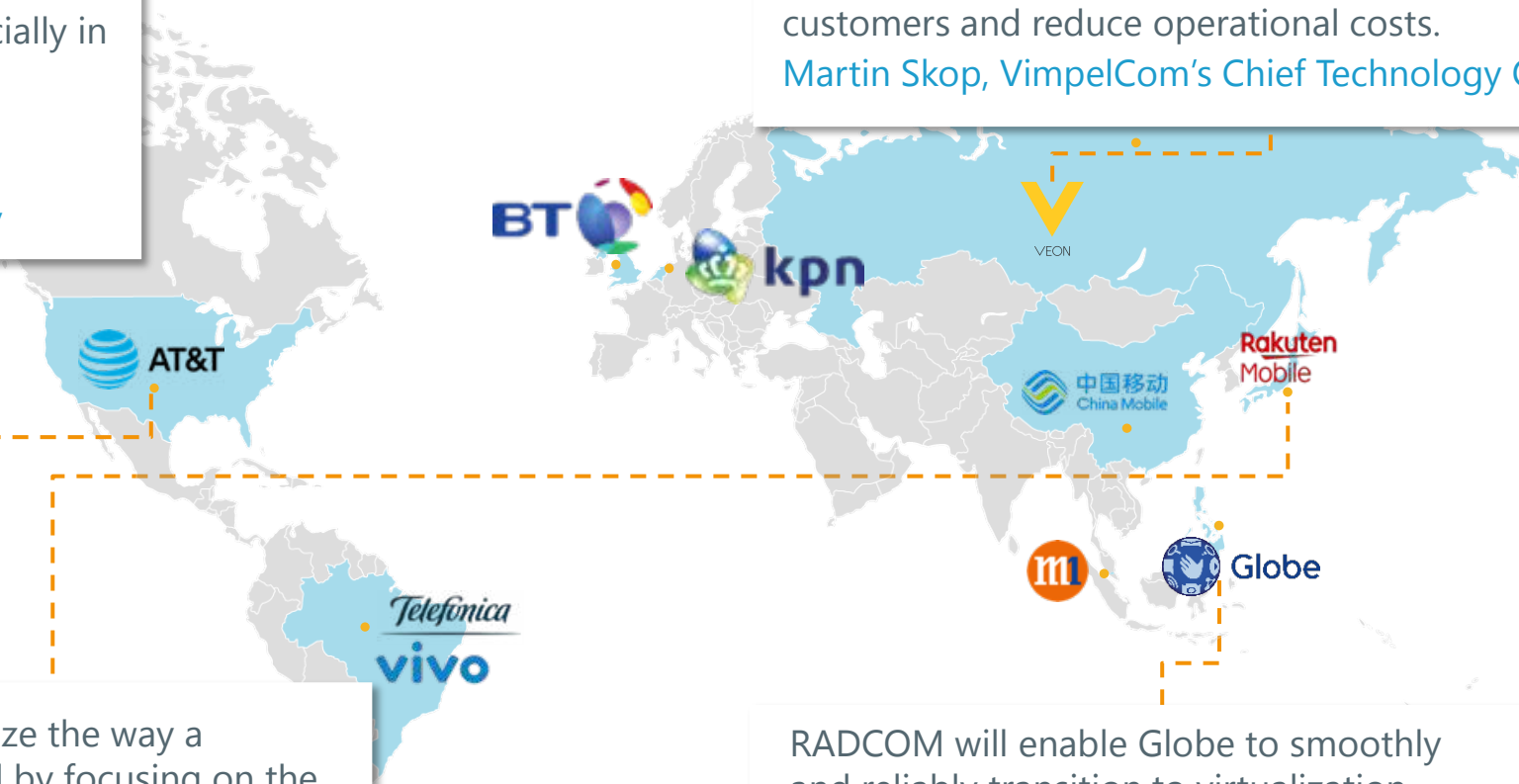
SELECTED CUSTOMERS WORLDWIDE

We selected RADCOM because of its functional strengths, especially in virtualization, scalability, performance and efficiency.

Susan A. Johnson, Senior Vice President AT&T Global Supply

Implementing RADCOM's solution enables us to increase the end-to-end customer experience we deliver to our Beeline customers and reduce operational costs.

Martin Skop, VimpelCom's Chief Technology Officer



Rakuten aims to revolutionize the way a mobile network is operated by focusing on the customer... RADCOM's unique solution enables this on a highly dynamic, fully virtualized network.

Tareq Amin, Chief Technology Officer, Rakuten Mobile

RADCOM will enable Globe to smoothly and reliably transition to virtualization, while assuring customer experience is transparent and guaranteeing quality of service.

James Lim, Globe Vice President for Network Technology Group

THE LEADING AUTOMATED ASSURANCE SOLUTION FOR OPTIMIZED MOBILE AND FIXED SERVICES



Per Subscriber VIP Groups Devices Network



NETWORK SERVICES

CONTROL
PLANE

USER
PLANE

ACCESS

EDGE

CORE

MOBILE

FIXED

PHYSICAL

VIRTUAL



GAIN REAL-TIME SUBSCRIBER ANALYTICS

Understand the customer experience and E2E troubleshooting



SMARTLY MONITOR YOUR NETWORK

From lab to launch, slicing, edge, NWDAF and automation



ACHIEVE COMPLETE NETWORK VISIBILITY

Covers multiple services, cloud agnostic and E2E (RAN to Core)



PROACTIVELY OPTIMIZE YOUR NETWORK

Automatically detect network anomalies using AI/ML

- E2E correlation across multiple domains and technologies
- Full control plane and user plane view: individual subscriber, VIP groups, devices, regions, cells, network elements

OUR 5G EXPERTISE

Applications & Use Cases

- Real-time subscriber analytics
- Full network lifecycle assurance (lab to full launch)
- Advanced E2E troubleshooting
- Packet and protocol analysis
- Call and session tracing
- Customer experience
- VIP/enterprise monitoring
- OTT/DPI analysis
- VoLTE monitoring
- Roaming monitoring
- IoT service monitoring
- Service quality management



Cloud-Native Architecture

- Cloud-agnostic (public, private, hybrid)
- Container-based
- Full CI-CD implementation
- Open API
- Orchestration integration (such as Kubernetes)

Automated Assurance

- AI-driven insights
- AI/ML-based anomaly detection
- Built-in load balancing and brokering
- Closed-loop
- Correlates data from multiple sources
- Predictive analytics
- Proactive assurance and alarms
- Real-time streaming analytics



To Promote the Progress

of Science and Useful Arts

The Director

of the United States Patent and Trademark Office has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this United States

Patent

grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America, and if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States of America, products made by that process, for the term set forth in 35 U.S.C. 154(a)(2) or (c)(1), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b). See the Maintenance Fee Notice on the inside of the cover.

Andrei Iancu
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

INNOVATIVE CLOUD-NATIVE SOLUTION

OWNING MULTIPLE PATENTS FOR LARGE-SCALE CLOUD ASSURANCE



Efficiently load balances traffic across a distributed network
Saves network and cloud resources



Automates cloud assurance deployments
Spins up all resources, dependencies and data flows



Handles limitless traffic for large scale networks
Offers scalable, continuous monitoring 24/7/365



Smartly distributes traffic while maintaining session data
Provides subscriber analytics for troubleshooting



Collects and analyzes network events and EDRs
Enables E2E monitoring from multiple data sources



Delivers smart traffic sampling
Saves OPEX while enabling E2E network monitoring

ENSURE A GOOD CUSTOMER EXPERIENCE

PROBE-BASED ASSURANCE CORRELATES CONTROL & USER PLANE FOR SUBSCRIBER ANALYTICS

What is the real-time user experience for premium video services?

How many subscribers are affected by this issue?

What network or RAN issue will resolve this issue?

Are there any problematic service issues?



KNOW YOUR CUSTOMERS' EXPERIENCE

PROACTIVELY IDENTIFY PROBLEMS AND PINPOINT THE ROOT CAUSE



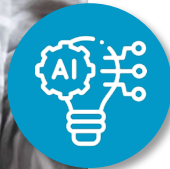
Gain end-to-end customer experience visibility (network, services, users, devices)



Correlate real-time subscriber analytics from the edge to the core



Optimize the network using analytics from the RAN to core to rapidly execute root cause analysis



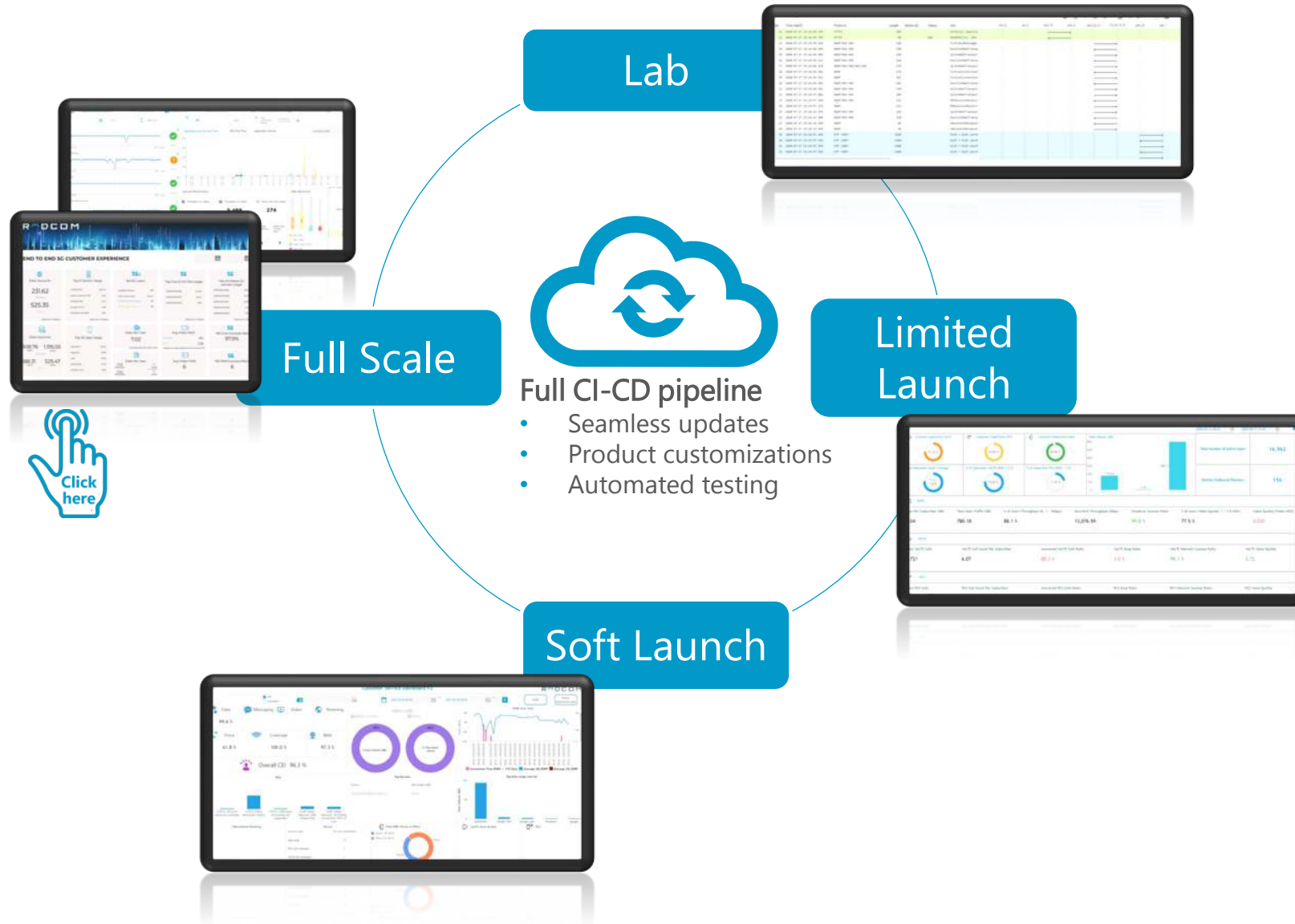
Utilize AI-based anomaly detection and predictive analytics to avoid customer-affecting issues



Automate network assurance with integration into the public cloud and leading orchestration solutions

ASSURE THE 5G NETWORK LIFECYCLE

PROBES PROVIDE CRITICAL INSIGHTS FROM PLANNING TO FULL-SCALE COMMERCIAL LAUNCH



Lab

- From advanced troubleshooting to multi-vendor E2E validation

Limited Launch

- E2E service monitoring and subscriber journey identifying network bottlenecks and degradations

Soft Launch

- Test all onboarding of new subscribers, executive dashboards with overall CEI per service and identify CEI impacting issues

Full Scale

- Monitoring all traffic loads on the network and ensure enterprise subscribers and premium services

SELECTED CASE STUDIES

RAKUTEN | CLOUD-NATIVE 4G & 5G ASSURANCE

ONE OF THE 1ST STANDALONE 5G ASSURANCE CONTRACTS

Rakuten Mobile

- Rakuten is a global leader in e-commerce, fintech, digital content spanning over 70 businesses
- Offers a myriad of cloud-based services to >1b customers worldwide
- In October 2019 launched a fourth mobile network in Japan
 - World's first fully virtualized network
 - Automated, and customer centric
- In September 2020 launched 5G services

RADCOM

RADCOM selected for a multi-year contract

- We have signed a multi-year contract in May 2019 to provide our assurance solution across Rakuten's entire 4G network
- E2E correlation of the service quality (from AltioStar's vRAN to network core)
- November 2020, we have signed an additional multi-year contract for their non-standalone and standalone 5G network
- Integrating RADCOM ACE into Rakuten Communications Platform (RCP)

AT&T | VIRTUALIZED 4G & 5G ASSURANCE

1ST VIRTUALIZED PROBING CONTRACT FOR A LARGE-SCALE NATIONWIDE OPERATOR



- 150M mobile subscribers
- In 2015 AT&T embarked on a six-year project to virtualize 75% of their network
- Achieved this 75% goal in September 2020
- Chose RADCOM in 2016 to migrate network probe functions to the cloud

"Selected RADCOM because of its functional strengths, especially in virtualization, scalability, performance and efficiency."

Susan A. Johnson, Senior VP AT&T Global Supply



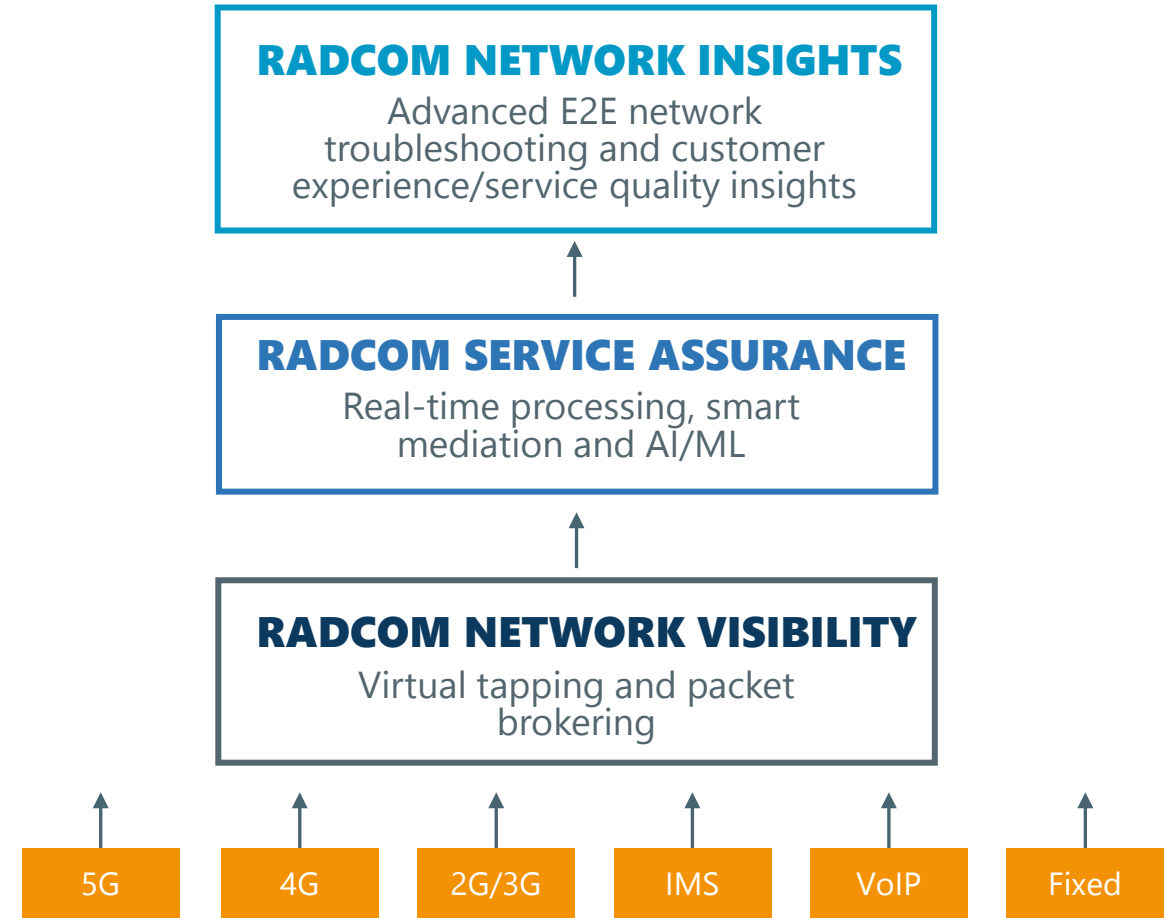
- We have been working with AT&T since 2016 on the most aggressive NFV transformation plan
- Providing cutting-edge virtualized technology, scaled to match AT&T's network capacity
 - E2E correlation with legacy probes
 - Fully compatible with ECOMP, ONAP and ETSI VNF lifecycle management
 - Operate directives by Ansible playbooks or RESTful API:
 - Instantiate/Heal/Update/Upgrade/Modify and Terminate VNF
 - Shared multi-tenant system architecture
- Our product portfolio has evolved and gained a significant competitive advantage as their NFV platform has advanced
- Signed a new, multi-year contract that includes an initial purchase of our 5G solution

RADCOM ACE SOLUTION OVERVIEW

RADCOM ACE: SOLUTION OVERVIEW

OFFERING NETWORK VISIBILITY, SERVICE ASSURANCE AND AI-BASED NETWORK INSIGHTS

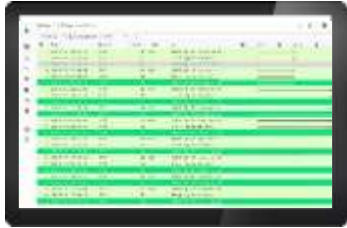
- Real-time subscriber analytics and advanced troubleshooting to ensure service quality
- Cloud-native for efficient scaling, high availability and automation
- Rapid product development and cloud-agnostic for multi-cloud deployments (public, private and hybrid)
- Automated lifecycle management with leading orchestrators and Kubernetes
- Open solution with standard API access
- Utilizes AI/ML for encrypted traffic and automated insights
- Offers an enhanced NWDAF for a closed-loop approach to network operations



NETWORK TROUBLESHOOTING APPLICATIONS

ADVANCED TROUBLESHOOTING AT THE PACKET & SESSION-LEVEL

Session Analyzer



Session-based, call tracing that provides an end-to-end correlated view of the call/network session for detailed network analysis

Packet Analyzer



Packet and protocol analysis used to view any packet flowing through the network for any selected subscriber or time

Network Analytics



Monitor KPI trends smartly and drill down for network troubleshooting both to the packet or session level across multiple domains

- 100% web-based, thin client
- Unified view across 4G and 5G
- Central enrichment
- Built for collaboration

- Correlates both event and packet data
- Supports multi-tabs and windows
- Drill through from the KPI level to the session and packet level

CUSTOMER & SERVICE INSIGHTS

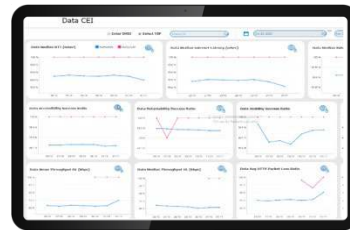
PROBE-BASED DATA IS CRITICAL FOR ROLLING OUT NEW SERVICES & TECHNOLOGIES

5G Launch



Smartly monitor the customer experience for 5G by monitoring mmWave, 4G vs 5G connectivity

Slice Assurance



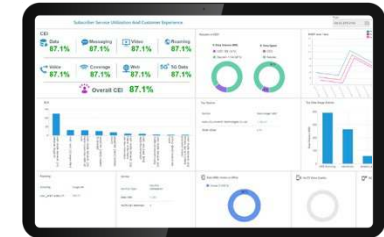
Understand how data services are functioning by offering an overview of the CEI for various network slices

Vo5G Assurance



Correlate the end-to-end Vo5G customer experience with network, device, cell and service performance in real-time

5G Service Utilization (RAN to Core Analysis)



Gain a service-level understanding of the real E2E customer experience

5G INSIGHTS

- Full support for SA 5G
- SBA architecture, SBI deciphering and complex CUPS correlation
- Offers the ability to detect and report on dual connectivity NR capable devices
- Enables the operator to differentiate between the 5G and 4G connected traffic
- Includes a complete set of KPI dashboards and drill down to an end-to-end correlated call trace

CUSTOMER & SERVICE INSIGHTS

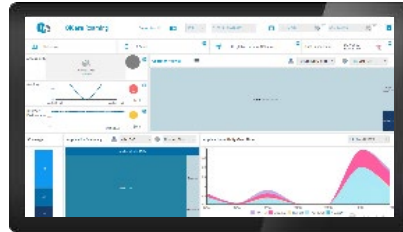
MONITOR END-TO-END SERVICE QUALITY AND IMPROVE MEAN TIME TO RESOLUTION

Enterprise Assurance



Proactively analyze and resolve issues for high importance groups before subscribers become aware of service degradations

Roaming Assurance



Monitor both inbound and outbound roamers to assure high quality roaming services

IoT Service Assurance



Assure IoT service connectivity, optimize network performance, and gain automatic anomaly detection

VoLTE/Vo5G Assurance



Correlate the end-to-end VoLTE/Vo5G customer experience with network, device, cell and service performance in real-time

GROUPS OF SUBSCRIBERS OR SERVICES

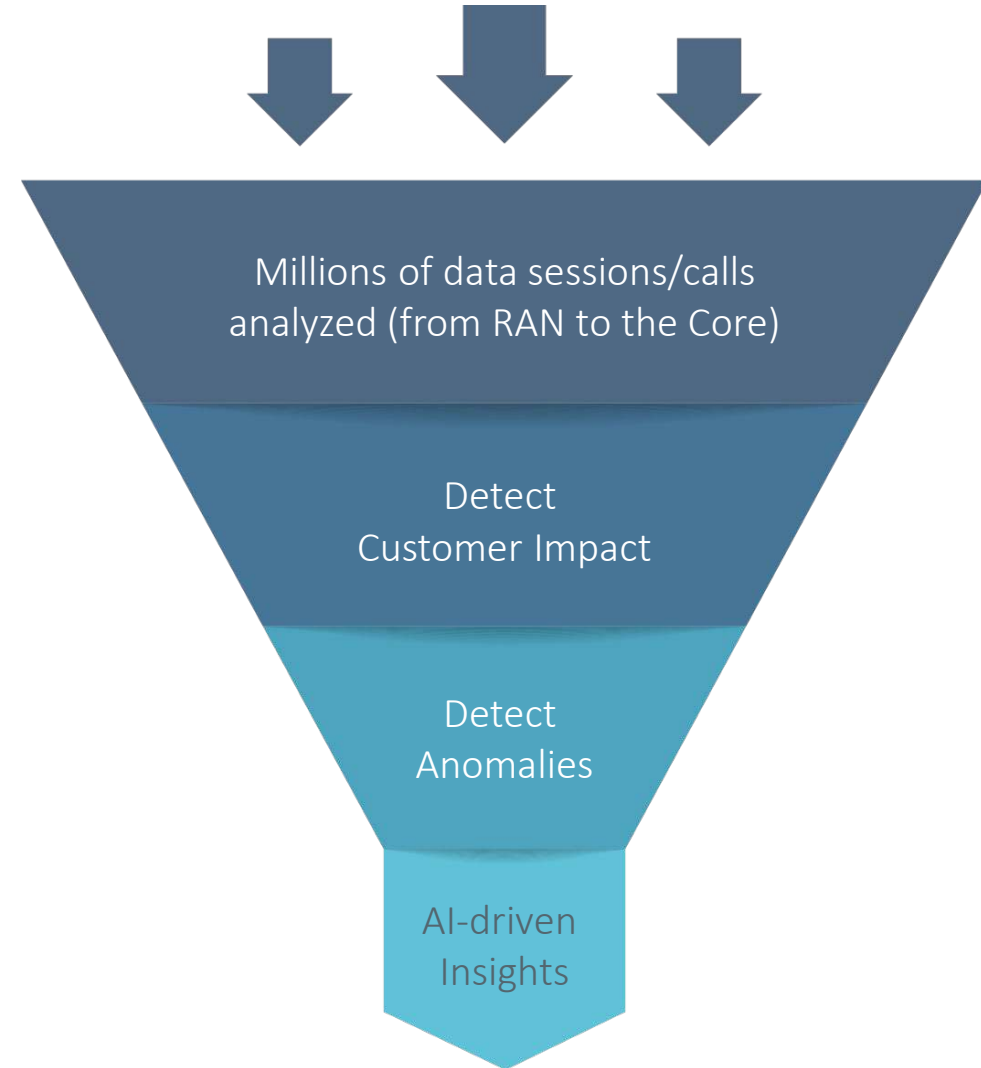
- Smartly ensure a VIP service, or a range of subscribers
- Receive alerts when the service drops below service quality thresholds
- Identify issues before they affect the VIP or enterprise customer
- Quickly and efficiently drill down to troubleshoot
- Understand the subscriber groups QoE (for individual sessions and for a specific time period)

PROACTIVE ASSURANCE

WHY PROACTIVE ASSURANCE FOR 5G

70% of operator time is devoted to discovery and root cause of network issues

- AI technologies have become increasingly mature
- Fast, low-cost compute make it cost-effective to analyze massive amounts of data
- AI/ML can help engineers reduce MTTR and optimize network performance more efficiently
- Use cases:
 - Optimizing network performance with anomaly detection
 - Smartly planning network capacity using predictive analysis
 - Improving the customer experience by utilizing machine learning



"Automatically detecting network anomalies is top AI/ML use case to improve service quality"

(RADCOM 5G Assurance Survey, May 2021)

OUR BUSINESS VALUE

NEXT-GENERATION ASSURANCE PROVIDES SIGNIFICANT RETURN ON INVESTMENT

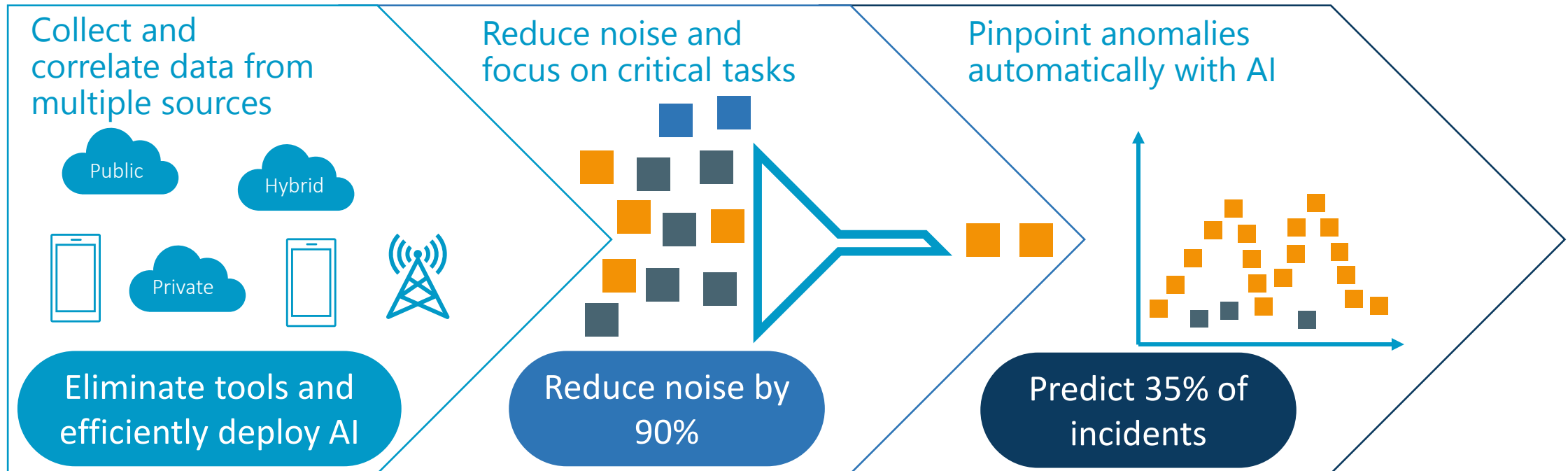
The right service assurance approach provides real-time subscriber analytics from the RAN to core

Business value to operators:

- Offers a substantial reduction in the total cost of ownership vs. traditional assurance solutions
- Protect revenue streams by ensuring premium service quality
- Monitor SLAs for enterprise and IoT customers as well as regulatory bodies
- Validate roaming and interconnect billing
- Provides significant return on investment (ROI)
- Upsell through sales and marketing campaigns
- Enables advanced assurance features, such as:
 - Traffic sampling
 - Built-in artificial intelligence and machine learning for automated KPI-based anomaly detection
 - Visibility into encrypted traffic and more
- Gain significant benefits from day one and is future-proof for advanced standalone 5G requirements

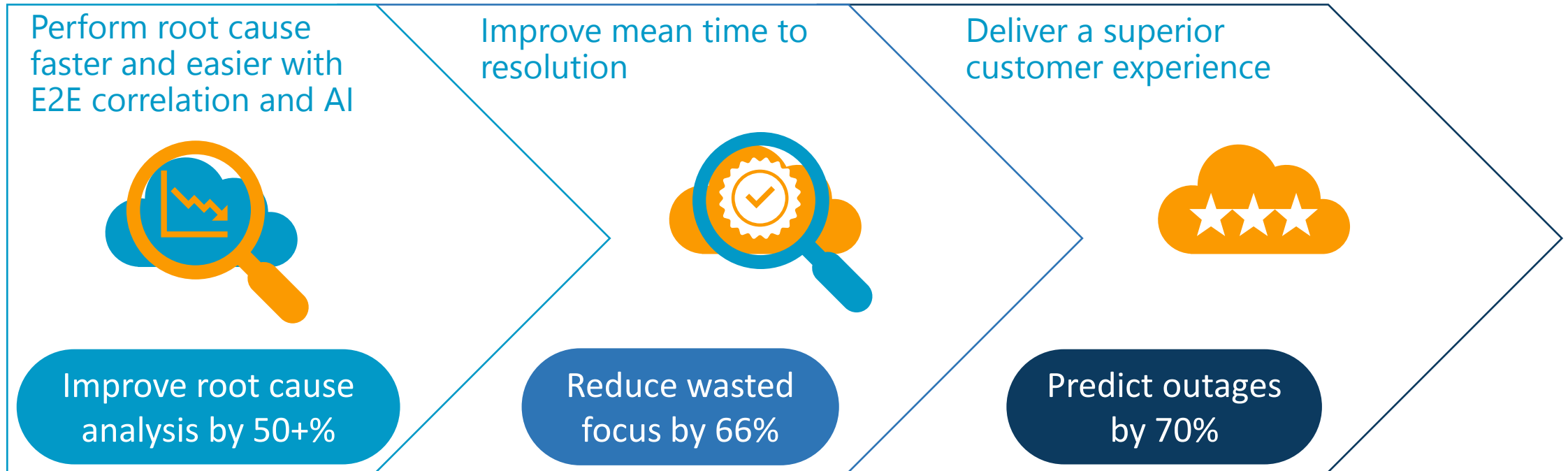
PROACTIVE ASSURANCE FOR NETWORK OPERATIONS

CORRELATE DATA AND AUTOMATICALLY PINPOINT CRITICAL NETWORK ANOMALIES



PREVENT ISSUES BEFORE THEY IMPACT CUSTOMERS

DELIVER A SUPERIOR CUSTOMER EXPERIENCE AND OPTIMIZE SERVICE QUALITY



WHY RADCOM ACE?



GAIN REAL-TIME SUBSCRIBER ANALYTICS

Understand the customer experience and E2E troubleshooting



SMARTLY MONITOR YOUR 5G NETWORK

From lab to launch, slicing, edge, NWDAF and automation



FULLY CONTAINERIZED ASSURANCE

Automated lifecycle, efficient scaling, and high availability



BENEFIT FROM CI/CD DEVELOPMENT PROCESSES

Rapid deployments of change requests and customizations



ACHIEVE COMPLETE NETWORK VISIBILITY

Covers multiple services, cloud agnostic and E2E (RAN to Core)



PROACTIVELY OPTIMIZE YOUR NETWORK

Automatically detect network anomalies using AI/ML



THANK YOU

Assure. Launch. Automate.