

CCS Acceptance Assurance+

Zero-touch assurance for Convergent / Online Charging programs



Type Approval



Field Acceptance



Continuous
Regression



AI-Accelerated
Analysis

From lab qualification to live-network readiness — with repeatable evidence, fast triage, controlled change & reporting.

What makes convergent (online) charging so hard?



Multi-Gen Networks

2G / 3G / 4G / 5G charging
in one system



Protocol Support

Diameter, RADIUS, HTTP/2
& proprietary, 5G
CHF/Nchf



Multi vendor integration

Many vendors, many
systems



BSS/OSS Integration

Mediation, Policy,
Subscriber Mgmt



Real-Time Charging

Low-latency session
control



Legal

Legal interception,
timestamp accuracy,
money regulations



Offline Charging

Batch CDR processing &
reconciliation



Rating & Tariffing

Voice, Data, SMS, VAS
logic



Test coverage

50+ Test objects, more
than 1.500 Test Cases,
weekly regressions

The operating model that works!

Built around predictable cadences, clear obligations, and objective evidence.

Testing becomes a delivery engine:



Testing Center of Excellence

A test automation platform, providing all capabilities to run test cases any time, a RACI based process pipeline to run challenging projects



Intent based test case scripting & zero touch

AI supported scripting, run with real devices and real-world user journeys. Remote device control, automation capabilities for lab hardware



Intelligent Analytics

Automated artifact collection (pcap traces, Level 3 device traces, CDRs/EDRs, logs, subscriber dumps, etc.), rule-based verification, and AI based Root Cause Analysis



Reporting and Visualization

A reporting engine integrated with (ALM/Jira) for standard statistics and a Grafana dashboard for any kind of visualization

Program goals & success criteria

CCS Acceptance Assurance proposes measurable goals that support both delivery (project) and operations (run).

Acceptance outcomes

- A stable, automated Type Approval baseline (core scenarios)
- Field Acceptance guided by synthetic journeys and evidence packs
- Objective pass/fail criteria with trace correlation (who/where/when)
- “No surprises” gate: critical journeys green for N consecutive runs

Core KPI examples:

- defect leakage ↓
- acceptance cycle time ↓
- evidence readiness ↑

Run & evolve outcomes

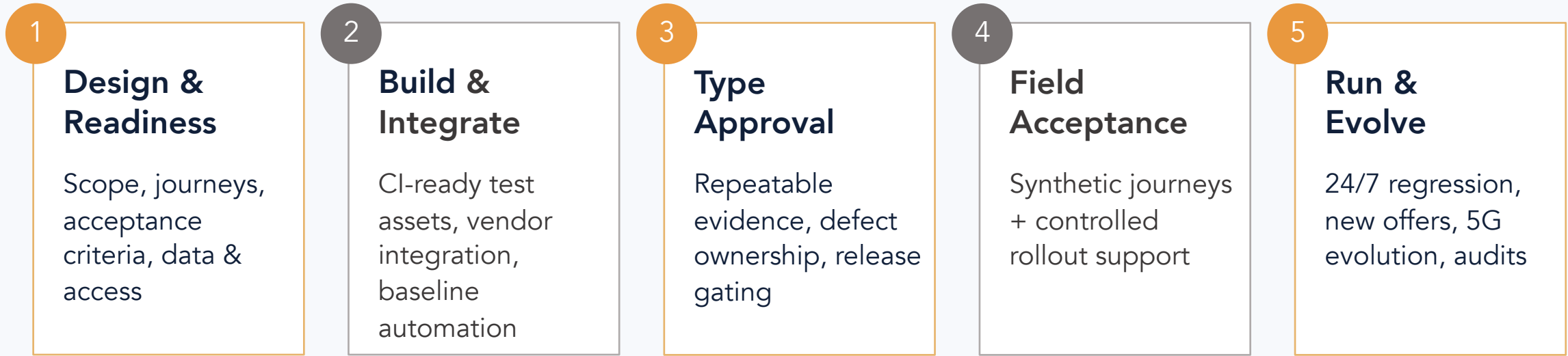
- Scheduled regression, e.g. every 15 minutes for top journeys
- Alarm after repeated failures + environment health checks
- Automated daily/weekly release readiness reports for PMO
- Continuous onboarding of new offers, new channels, new 5G services

Core KPI examples:

- MTTD ↓
- MTTE ↓
- false positives ↓
- SLA evidence ↑

The CCS Acceptance Assurance lifecycle

Five phases, one continuous regression loop. The goal is to industrialize evidence and reduce late surprises.



Continuous zero-touch regression loop

Schedule → execute → collect evidence → cluster failures → propose root-cause → verify fix → update baseline

Operating model: responsibilities

A simple RACI-lite keeps velocity high and prevents “testing gaps” between vendors and operator teams.

Network Operator

- Define acceptance criteria, risk priorities, and rollout constraints
- Provide lab & field access, test SIMs/offers, logging/tracing approvals
- Own change control and production readiness gates
- Provide service documentation (HLD/LLD)
- Provide charging documentation
- Provide tariffs

Vendors / Integrators

- Deliver build increments and interface conformance
- Support defect triage with domain SMEs
- Fix defects and supply configuration/version documentation
- Provide compliancy for 3GPP

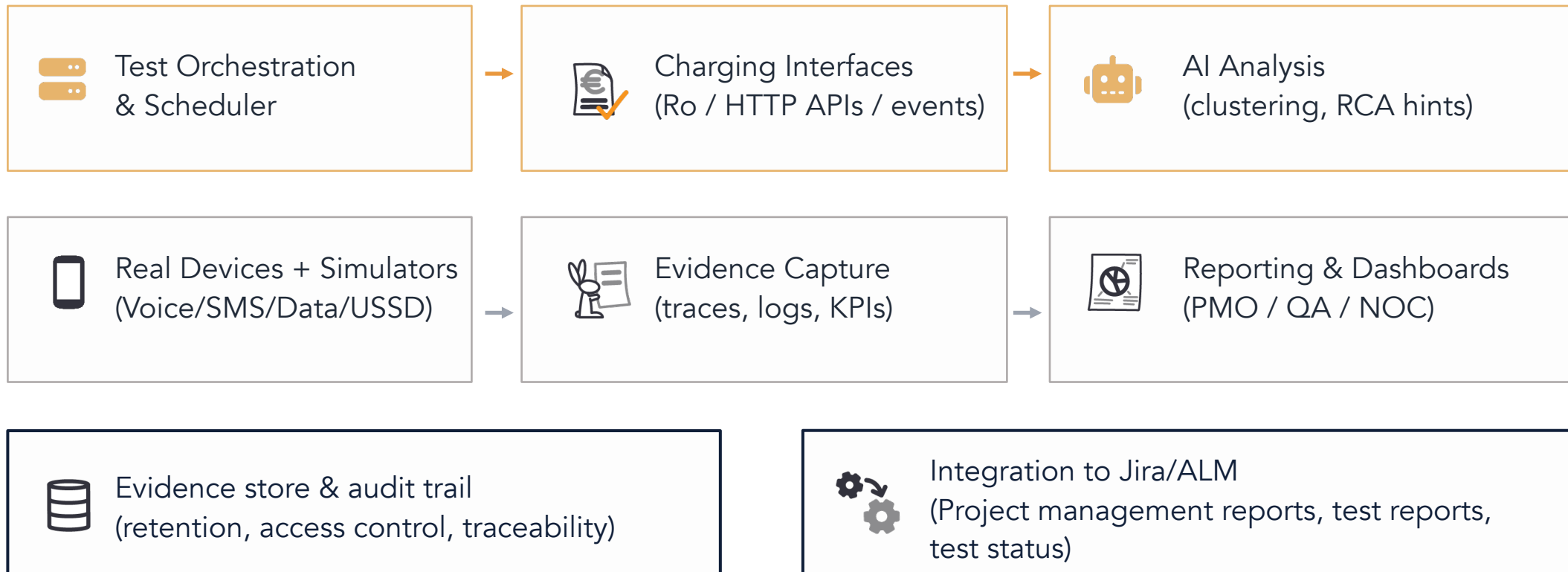
QiTASC Assurance

- Provide test automation framework and integration
- Run zero-touch regression and acceptance suites
- Produce evidence packs + defect clustering/RCA summaries
- Operate the testing factory with embedded lab support
- Report and visualize the outcome for PM, QA and TM.

Steering cadence: • daily triage stand-up • weekly release readiness • milestone acceptance boards (Type / Field)

Set-up overview (reference)

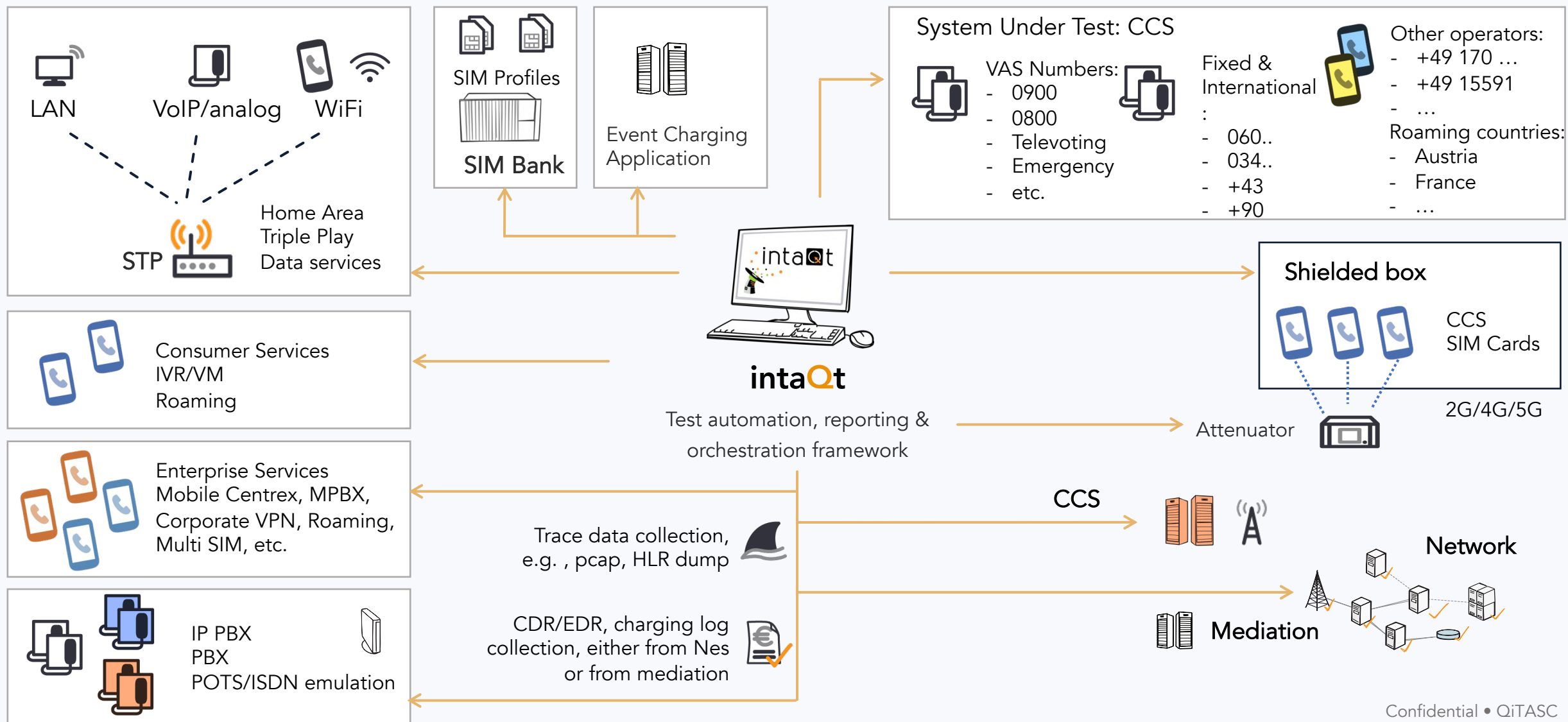
A minimal set-up connects test orchestration, traffic generation, evidence capture, and reporting — securely.



Required set-up

Reference architecture for Type Approval + Field Acceptance + continuous regression

Any real-world CCS action: Call, SMS/MMS, Data, USSD, Event, Roaming, etc. – every scenario automatically triggered and run



Test object list

Convergent/online charging: test objects

- Charging Transaction Control
- Balance Handling
- Time stamp accuracy
- Rating & Charging Switch
- Basic Rating SMS
- Basic Rating MMS
- Rating general (Voice)
- Event Charging and Payment
- Rating and Charging IP Event
- Data Charging
- Rating Periodic
- VAS Numbers
- Short Numbers
- Special Numbers
- CDR Verification
- Ticketing /MSS CDRs

Service Logic

- General requirements on CCS
- First Call Configuration
- Life-Cycle Management
- Call Control
- Voice / Voice Roaming
- Short Message Service (SMS)
- SMS Roaming
- CS Data, Video
- IP Session
- IPC integration
- USSD Menu
- Supplementary Services
- Subscriptions (FU, Data, SMS, ...)
- Subscription Data SnapIn
- Data Roaming Cap
- Cross Feature Dependencies

Operational features

- MNP
- VM integration
- FDTVM
- TOPUP
- Emergency Top-up
- Screening
- Interfaces Satellite Systems
- Provisioning
- Notification & User Interaction
- Self Care
- Operator APP
- Statistics & Data Warehouse KPIs
- Legal Interception
- Brand Management
- Bulk data handling
- Tariff variations

Required platform features

Keep the focus on the operating model: the platform must enable repeatability, evidence, and governance.

Orchestration & scale

- Scheduling, parallel execution, and environment-aware routing
- Reusable test assets and versioned baselines
- CI/CD integration and release gating hooks
- Multitenancy, to assure parallel teams without interfering each other

Evidence & auditability

- Automated evidence packs (traces, logs, KPIs, MOS score, steps)
- Correlation across domains and trace compare/verification
- RBAC, retention policies, and audit trail

AI acceleration

- Intent-based test scripting (business intent → executable)
- Failure clustering and RCA summaries for faster triage
- Agentic task automation with human quality gates

How QiTASC integrates

CCS Acceptance Assurance is typically deployed close to the lab and test network, with controlled access to evidence and reporting.

Deployment & connectivity

- On-prem, customer private cloud, or segmented lab environment
- VPN / dedicated links to lab and (optionally) field test segments and/or roaming destinations
- Controlled interface access (APIs, Diameter/HTTP endpoints, logs)
- Separation of test traffic and production traffic with clear policies

Security & data handling

- Role-based access for dashboards and evidence
- Data minimization: only what is needed for test evidence
- Retention rules aligned with operator security policies
- Audit trail of test runs, configuration and evidence packages

Real projects. Real results. Zero compromises.

2

Successful Migrations

Functional test coverage and more than 20 Million subscribers moved with zero loss

5G

Rollouts Supported

40 Million subscribers upgraded to 5G Network & edge charging enabled

200.000

Test Case Run

In a timeframe of 3 years, we ran more than 200.000 test cases with evidence pack with real devices, end to end

50/1500

Test Objects & Test Cases

50 different test objects and 1.500 test cases have been developed for CCS functional verification

AAA	Authentication, Authorization and Accounting	OCS	Online Charging System
CAP	CAMEL Application Part	PCF/PCRF	Policy Control Function / Policy and Charging Rules Function
CAMEL	Customised Applications for Mobile networks Enhanced Logic	PCAP	Packet capture file(s)
CCS	Convergent Charging System	QoE/QoS	Quality of Experience / Quality of Service
CDR/EDR	Call / Event Detail Record	RA	Revenue Assurance
CI/CD	Continuous Integration / Continuous Delivery	RCA	Root Cause Analysis
DWH	Data Warehouse	REST	Representational State Transfer (API style)
Gy/Ro	Diameter charging interfaces (architecture dependent)	SME	Subject Matter Expert
HLR/HSS	Home Location Register / Home Subscriber Server	SOAP	Simple Object Access Protocol
IMSI/MSISDN	Subscriber identifiers	SUT	System Under Test
KPI	Key Performance Indicator	USSD	Unstructured Supplementary Service Data
MOS	Mean Opinion Score (voice QoE metric)	VAS	Value-Added Services
NE	Network Element	VoIP	Voice over IP