

Business Requirements for VAS And Digital Systems

The table below outlines Sudani’s business requirements for Bulk SMS, USSD and IVR, under the “**Items**” column, along with Huawei’s compliance status under the “**Compliance**” column, defined as follows:

- **FC** – Fully Compliant
- **PC** – Partially Compliant
- **NC** – Not Compliant

Items	Module	Compliance
Bulk SMS System	BulkSMS	
A web-based and API-enabled Bulk SMS system.	BulkSMS	

<p>The platform shall provide a carrier-grade, web-based and API-enabled Bulk SMS system to support high-volume messaging for enterprises, partners, and internal operations.</p> <p>The solution shall include:</p> <p>Web Portal Interface: Secure web-based portal for composing, scheduling, managing, and tracking bulk SMS campaigns with role-based access control.</p> <p>API Integration: RESTful APIs (HTTP/HTTPS, JSON/XML) for automated SMS submission, delivery reports, and campaign management by third-party systems and enterprises. High TPS & Scalability: Support high message throughput with configurable TPS limits per client and horizontal scalability.</p> <p>Message Types: Support A2P transactional and promotional SMS, Unicode messages, flash SMS, and long message concatenation.</p> <p>Scheduling & Personalization: Allow campaign scheduling, message personalization (e.g., dynamic fields), and segmentation capabilities.</p> <p>Delivery Reports (DLR): Real-time and batch delivery status reporting with detailed response codes.</p> <p>Traffic Management & Throttling: Configurable rate control, anti-spam controls, and content filtering (duplicate and offensive text detection).</p> <p>Monitoring & Reporting: Real-time dashboards showing traffic volume, success/failure rates, TPS usage, and exportable reports (CSV, Excel, PDF). The system shall ensure high availability, integration with SMSC and billing systems, and reliable, secure enterprise-grade messaging services.</p>	BulkSMS	
Role-Based Access Control (RBAC) & Feature Matrix	BulkSMS	
<p>The Bulk SMS platform shall implement a robust Role-Based Access Control (RBAC) framework to ensure secure, multi-tenant, and controlled access across Admin, Reseller, and Corporate roles, with granular permission management and full audit traceability.</p>	BulkSMS	

Admin Role & Features	BulkSMS	
<p>The Admin shall have full system-level control and governance authority.</p> <p>User & Account Management Create / edit / suspend users (resellers & corporate accounts) Role-based access configuration (RBAC management) API key generation and management Account deletion and lifecycle management</p> <p>Credit & Commercial Management Add / deduct credits (manual wallet adjustments) Set global SMS cost / base rate plans Commission configuration for resellers Invoice generation and management Revenue visibility and profit monitoring</p> <p>Gateway & Routing Management Manage SMPP / HTTP routes Configure route priority and failover logic TPS throttling at global or account level On-net, off-net, and international routing configuration</p> <p>Sender ID Management Approve / reject sender ID requests Monitor sender ID usage</p> <p>Security & Monitoring Enforce RBAC policies 2FA enforcement for sensitive roles IP whitelisting Access to system monitoring, performance dashboards, logs Full audit trail visibility</p>	BulkSMS	
Reseller Role & Features	BulkSMS	

<p>Resellers operate under Admin governance and manage corporate clients.</p> <p>Credit Management Purchase credits Allocate credits to corporate clients Track credit usage and client consumption</p> <p>Pricing Management Set custom SMS rates per client (within allowed limits) Country-based pricing configuration Margin control and profitability tracking</p> <p>Client Management Create / suspend corporate accounts Configure TPS limits per client Assign rate plans</p> <p>Reporting Client usage reports Profit and margin reports Exportable reports</p> <p>Sender ID Manage client sender IDs Assign approved sender IDs API Management Generate API keys for clients Monitor API usage and traffic</p>	BulkSMS	
Corporate Role & Features	BulkSMS	

<p>Corporate users focus on campaign execution and messaging operations.</p> <p>Messaging: Single SMS, Bulk SMS, Scheduled SMS, Personalized SMS (dynamic fields support)</p> <p>Contacts: Upload contact lists, Group management</p> <p>Campaign Management: Campaign tracking, Pause / resume campaigns, View campaign cost estimation</p> <p>Reports: Real-time delivery reports (DLR), Campaign cost summaries, Usage statistics</p> <p>Wallet: Balance view, Transaction history</p> <p>Sender ID Request sender ID (subject to approval)</p> <p>Security Optional 2FA login Restricted access based on assigned permissions</p>	BulkSMS	
Additional RBAC Capabilities	BulkSMS	
<p>Granular permissions per role and per account</p> <p>Multi-level approval workflows (e.g., campaign approval before sending)</p> <p>Account-level TPS and quota control</p> <p>Full audit logging of all user and system actions</p> <p>Secure multi-tenant architecture with logical traffic separation</p>	BulkSMS	
Quota-Based Account Model	BulkSMS	
<p>The Bulk SMS platform shall support a quota-based account model whereby enterprise and reseller accounts are provisioned with predefined SMS quotas (e.g., monthly, campaign-based, or contractual volume allocations) instead of a monetary wallet balance model.</p> <p>The system shall provide real-time quota consumption monitoring, automated usage tracking per account, configurable quota thresholds(Validation or quota exhausted), and automatic traffic suspension or restriction once the allocated quota is exhausted.</p> <p>The platform shall support configurable quota auto-renewal mechanisms based on predefined billing cycles or contractual agreements, including automatic quota reset and reallocation upon renewal.</p> <p>The system shall also provide detailed quota utilization reports, validation controls, alert notifications, and audit logs to ensure accurate quota enforcement and transparency.</p>	BulkSMS	

User self-service interface for uploading lists, composing messages, and scheduling campaigns.	BulkSMS	
<p>The Bulk SMS platform shall provide a secure self-service web interface enabling users to independently manage their SMS campaigns.</p> <p>The interface shall allow users to:</p> <p>Upload Recipient Lists: Import contact lists via supported file formats (e.g., CSV, Excel), with validation checks for duplicates, invalid numbers, and blacklist filtering.</p> <p>Compose Messages: Create SMS content with support for Unicode, dynamic personalization fields (e.g., name, account number), message length preview, and cost estimation before submission.</p> <p>Schedule Campaigns: Schedule immediate or future message delivery with configurable date and time settings, including recurring campaign options where required.</p> <p>Preview & Approve: Preview campaign details (recipients count, estimated cost, sender ID) before final submission, with optional approval workflows if enabled.</p> <p>Track & Monitor: View real-time campaign status, delivery reports (DLR), success/failure metrics, and export campaign reports.</p> <p>The interface shall enforce role-based access control, TPS limits, quota validation, opt-in/opt-out compliance, and full audit logging to ensure secure, controlled, and user-friendly campaign management.</p>	BulkSMS	
Seamless integration with Sudani’s existing infrastructure and billing systems	BulkSMS	

<p>The solution shall provide seamless integration with Sudani’s existing network, IT, and billing infrastructure to ensure interoperability, operational continuity, and accurate revenue processing.</p> <p>The platform must support:</p> <p>Core Network Integration: Connectivity with MSC, HLR/HSS, SMSC, IVR, IN/OCS, and other VAS platforms where applicable.</p> <p>Billing System Integration: Real-time integration with prepaid (OCS) and postpaid billing systems for charging validation, CDR generation, and reconciliation.</p> <p>CRM & Customer Care Integration: Synchronization with CRM systems for subscription visibility, complaint handling, and service management.</p> <p>ERP Integration: Interface with ERP and finance systems for invoicing, settlement, revenue reconciliation, and reporting.</p> <p>Third-Party Platform Integration: Capability to integrate with external partners, aggregators, fintechs, and enterprise systems via secure APIs.</p> <p>Open API Framework: REST/SOAP-based APIs with secure authentication, encryption, IP whitelisting, and configurable rate limiting.</p> <p>Data & Reporting Integration: Export of transactional and financial data to data warehouse, BI, or analytics platforms.</p> <p>Standard Protocol Support: Compatibility with industry-standard protocols (e.g., REST, SOAP, Diameter, CAMEL, MAP, SMPP) as required.</p> <p>High Availability & Performance: Integration architecture that maintains telecom-grade performance without impacting existing services.</p> <p>The integration framework shall ensure secure data exchange, accurate billing and settlement, operational scalability, and alignment with Sudani’s technical and compliance standards.</p>	BulkSMS	
High Throughput Requirement	BulkSMS	
<p>The Bulk SMS platform shall support high-throughput messaging capabilities, with a minimum capacity of [X] SMS per second, ensuring that large-scale campaigns can be delivered efficiently, even during peak traffic periods.</p> <p>The system shall provide horizontal scalability to increase TPS capacity as demand grows, with configurable per-account and per-client TPS limits. It must include real-time monitoring of throughput, queue management, load balancing, and traffic prioritization to maintain performance, reliability, and SLA compliance during high-volume operations.</p>	BulkSMS	

Unicode and Multi-Language Support	BulkSMS	
<p>The Bulk SMS platform shall provide full Unicode support to enable message delivery in Arabic, English, and other languages with accurate character rendering and encoding compliance. The system must support multi-language message composition, proper handling of Unicode character sets (e.g., UTF-8/UCS-2), automatic message length calculation based on encoding, and correct concatenation of long messages. It shall ensure consistent display across various handset types and networks, without truncation or character corruption.</p>	BulkSMS	
Personalization (Dynamic Fields)	BulkSMS	
<p>The Bulk SMS platform shall support message personalization through dynamic merge fields within SMS templates (e.g., customer name, account number, due date, reference ID).</p> <p>The system must allow users to upload recipient data files containing corresponding variables and automatically map these fields into predefined placeholders within the message body. It shall support validation of dynamic fields before campaign execution, preview functionality, and accurate rendering during message delivery. Personalization must be supported for both standard and Unicode messages while ensuring data privacy, audit logging, and secure handling of subscriber information.</p>	BulkSMS	
Delivery Receipts and Status Tracking	BulkSMS	

<p>The Bulk SMS platform shall provide comprehensive Delivery Receipt (DLR) and status tracking capabilities to ensure full visibility of message delivery outcomes.</p> <p>The system must support real-time and asynchronous delivery feedback with standardized status codes, including Delivered, Failed, Pending, Expired, and Rejected, along with detailed failure reasons where available.</p> <p>The platform shall support full end-to-end (E2E) delivery tracking across the complete messaging path (Bulk SMS Platform → SMSC → Subscriber handset), ensuring traceability through unique message IDs and transaction references. It must enable correlation of submission reports, SMSC acknowledgments, and final delivery status to provide complete lifecycle visibility.</p> <p>The solution shall provide dashboards and downloadable reports to monitor delivery performance, retry attempts, routing behavior, and campaign success rates. It must support API-based DLR callbacks (webhooks) for enterprise integration, maintain full audit logs of message lifecycle events, and enable detailed troubleshooting through end-to-end traceability mechanisms.</p>	BulkSMS	
<p>Campaign Scheduling and Throttling Controls</p>	BulkSMS	
<p>The Bulk SMS platform shall provide advanced campaign scheduling and throttling capabilities to ensure controlled and efficient message delivery.</p> <p>The system must allow users to schedule campaigns for future dates and times, including support for time-zone awareness and optional recurring schedules. It shall provide preview and approval workflows before execution where required.</p> <p>The platform shall support configurable throttling controls to manage message sending speed (TPS limits) at global, reseller, account, and campaign levels. Throttling mechanisms must prevent network congestion and overload, ensure fair usage across clients, and comply with operator-defined traffic policies.</p> <p>Real-time monitoring of campaign progress, queue management, and dynamic adjustment of sending rates shall be supported to maintain service stability and SLA compliance.</p>	BulkSMS	
<p>Blacklist and Opt-Out Management</p>	BulkSMS	

<p>The Bulk SMS platform shall provide comprehensive Blacklist and Opt-Out management capabilities to ensure regulatory compliance and customer preference enforcement.</p> <p>The system must automatically manage Do Not Disturb (DND) and opt-out lists, ensuring that customers who unsubscribe or opt out are excluded from all future promotional campaigns. Opt-out requests (e.g., via SMS keywords such as STOP) shall be processed in real time and immediately reflected in the suppression database.</p> <p>The platform shall support centralized blacklist management at global, reseller, and corporate levels, with configurable override rules (where permitted for transactional messages). It must maintain full audit logs of opt-in/opt-out events, support integration with external DND registries if required, and provide reporting on suppression counts and compliance status.</p>	BulkSMS	
<p>Two-Way SMS (Interactive Messaging)</p>	BulkSMS	
<p>The Bulk SMS platform shall support Two-Way SMS functionality, enabling recipients to reply to messages and interact with automated or workflow-driven responses.</p> <p>The system must support keyword-based routing (e.g., YES/NO, STOP, JOIN), short codes or virtual numbers for inbound messaging, and real-time processing of Mobile Originated (MO) messages. It shall allow configurable auto-responses, rule-based workflows, and integration with external systems (e.g., CRM, survey platforms, ticketing systems) for advanced interaction scenarios such as confirmations, surveys, voting, and feedback collection.</p> <p>The platform shall provide inbound message tracking, response analytics, opt-in/opt-out handling, and full audit logging. It must support API callbacks (webhooks) for real-time delivery of inbound messages to enterprise systems and maintain secure, scalable processing of interactive campaigns.</p>	BulkSMS	
<p>Security and Compliance</p>	BulkSMS	

The Bulk SMS platform shall implement comprehensive security and compliance controls to ensure data protection and regulatory adherence.

The system must provide end-to-end encryption for data in transit (e.g., HTTPS/TLS) and encryption at rest for databases, backups, and sensitive logs. Secure key management and access controls shall be enforced to protect subscriber and enterprise data.

The solution shall comply with Sudanese telecom regulations and applicable data privacy standards, including lawful interception support (where required), audit traceability, and data retention policies aligned with regulatory guidelines.

The platform shall implement role-based access control (RBAC) with granular permissions, multi-factor authentication for sensitive roles (optional), IP whitelisting, and full audit logging to prevent unauthorized access and misuse. Continuous monitoring, intrusion detection (where applicable), and periodic security reviews shall be supported to maintain operational integrity and compliance.

BulkSMS

Reporting & Analytics

BulkSMS

The Bulk SMS platform shall provide comprehensive Reporting and Analytics capabilities to support operational control, financial tracking, and business intelligence.

The system must offer real-time dashboards displaying TPS load, active sessions, live traffic, delivery performance, and failure statistics with detailed rejection reasons.

The platform shall provide, Not limited to:

Total SMS Reporting: Aggregated SMS statistics (success, failure, rejected with reasons) across minute, hourly, daily, weekly, monthly, and yearly intervals.

Per-Account Reporting: Detailed SMS statistics per account (success, failure, rejected with reasons) across configurable time ranges.

MSISDN-Level Reporting: Detailed reporting at MSISDN level (not only service-based) to analyze individual subscriber consumption patterns, delivery outcomes, response behavior, opt-in/opt-out status, and overall usage trends.

Bulk Consumption Reports: Usage and traffic consumption per account, reseller, and system level.

Top 10 Accounts Report: Ranking of top accounts based on volume or revenue.

Real-Time TPS Dashboard: Live throughput monitoring and performance tracking.

Revenue & Profit Reports: Revenue breakdown per account, reseller, route, and campaign, including profitability insights.

Delivery Rate Reports: Detailed delivery rate analysis and routing performance metrics.

The reporting module shall support exportable reports (CSV, Excel, PDF), downloadable summaries, advanced filtering (account, campaign, sender ID, MSISDN, destination, route, date range), and drill-down capabilities, ensuring full transparency, behavioral insight, and reconciliation accuracy.

BulkSMS

3rd Party Integration

BulkSMS

<p>The Bulk SMS platform shall provide comprehensive third-party API and integration capabilities to enable seamless connectivity with external systems, enterprises, aggregators, and partners. The solution must expose secure RESTful APIs (HTTP/HTTPS, JSON/XML) for:</p> <ul style="list-style-type: none"> SMS submission (single and bulk) Delivery receipt (DLR) callbacks via webhooks Inbound (MO) message handling Account balance and quota inquiry Campaign management and reporting Sender ID management (subject to approval workflow) <p>In addition, the platform shall support SMPP (Short Message Peer-to-Peer) account integration, including:</p> <ul style="list-style-type: none"> SMPP v3.4 or higher support Dedicated SMPP accounts per enterprise or reseller Bind types (TX, RX, TRX) Configurable throughput (TPS) per SMPP account Real-time DLR over SMPP Support for long message concatenation and Unicode (UCS-2) Secure connectivity via IP whitelisting and optional TLS Routing configuration and destination-based charging rules <p>The system shall provide:</p> <ul style="list-style-type: none"> Secure authentication mechanisms (API keys, OAuth 2.0, token-based access) Rate limiting and traffic control per API/SMPP account High availability API gateway and SMPP gateway architecture Flexible request/response parsing and mapping for enterprise workflows <p>All integrations shall ensure encrypted communication, full transaction logging, SLA monitoring, and carrier-grade reliability for secure and scalable messaging services.</p>	BulkSMS	
OTT & Multi-Channel Messaging Support	BulkSMS	

<p>The Bulk SMS platform shall support OTT messaging channels (e.g., WhatsApp Business, Telegram, and other supported OTT platforms) in addition to traditional SMS, enabling true multi-channel campaign management.</p> <p>The system shall allow operators and resellers to create, manage, and execute campaigns across multiple channels (SMS, OTT, and hybrid routing), with configurable channel selection rules, fallback logic (e.g., OTT to SMS), channel-specific templates, unified delivery tracking, and consolidated reporting across all messaging channels.</p>	BulkSMS	
Advanced Intelligence & Optimization Features	BulkSMS	
<p>The platform shall support advanced intelligence-driven capabilities to enhance engagement, optimize delivery performance, and protect revenue.</p> <p>Smart Channel Optimization Automatically select the most effective communication channel (SMS, OTT, Voice) based on delivery history, subscriber behavior, cost efficiency, and configurable routing rules, with defined fallback logic.</p> <p>Engagement Scoring Engine Assign a dynamic engagement score to each MSISDN based on interaction history, response rates, opt-out behavior, and campaign participation to enable smarter targeting and minimize spam risk.</p> <p>Predictive Campaign Recommendation Analyze historical campaign data to recommend optimal send time, channel, frequency, and content style to maximize conversion and engagement.</p> <p>Fraud & Traffic Anomaly Detection Monitor traffic patterns in real time to detect abnormal behavior, API misuse, SMS flooding, artificial traffic inflation, or suspicious routing activities, with automated alerts and mitigation controls.</p> <p>Dynamic Template Personalization Enable advanced personalization beyond static merge fields by dynamically adjusting tone, language, and message structure based on subscriber profile, preferences, and engagement history.</p> <p>Intelligent Frequency Cap Management Automatically control message frequency per MSISDN based on engagement level, opt-out risk, regulatory limits, and configurable business rules.</p> <p>Unified Communication History Provide a consolidated timeline of all communication interactions (SMS, OTT, Voice, USSD, CRBT)</p>	BulkSMS	

<p>per subscriber to support advanced analytics and customer lifecycle management.</p> <p>Revenue Leakage Protection Detect billing inconsistencies, routing misclassification, duplicate submissions, and missing charging records to safeguard telecom revenue and ensure reconciliation accuracy.</p> <p>Campaign A/B Testing Engine Support controlled testing of multiple campaign variants with automated performance comparison and dynamic selection of the highest-performing option.</p> <p>Conversational Campaign Builder Enable interactive, chatbot-style campaigns across SMS, OTT, and Voice channels, supporting automated two-way engagement workflows and decision-based routing logic.</p> <p>These capabilities shall be configurable, scalable, and aligned with enterprise-grade security and telecom regulatory standards.</p>		
<p>Performance, Monitoring & Reliability</p>	<p>BulkSMS</p>	
<p>The Bulk SMS platform shall provide comprehensive Performance, Monitoring, and Reliability capabilities to ensure operational stability, visibility, and proactive issue management.</p> <p>Real-Time Monitoring & Tracking Real-time monitoring of live SMS traffic and TPS performance. Live trace capability at account level and MSISDN level (single or multiple). End-to-end SMS tracking (submission → SMSC → delivery status). Requests and responses dashboard showing success and failure with detailed reasons. Performance dashboard including SMS traffic volume, TPS capability, queue status, and delivery trends. Display SMS content (subject to role-based access control and compliance rules).</p> <p>System & Service Monitoring System health monitoring (CPU, memory, storage, database, application nodes). Service-level monitoring per account, route, and shortcode. License usage monitoring with threshold alerts. Monitoring of SMSC connectivity and routing health.</p>	<p>BulkSMS</p>	

<p>Logs & Diagnostics Access to PDU logs, connection logs, and event logs for troubleshooting. Detailed transaction traceability with message ID correlation. Historical log retention aligned with compliance policies.</p> <p>Alerts & Notifications Configurable alarm notifications via SMS, Email, and Web interface. Automated alerts for: High failure rate Delivery drop Revenue anomaly Queue backlog SMSC failure Low credit / balance threshold Customer notifications for low balance via SMS, Email, and Web portal.</p> <p>Backup & Recovery Automatic configuration backup and restoration. Secure backup of system configurations and routing settings. The platform shall ensure high availability, real-time visibility, proactive fault detection, and telecom-grade operational reliability.</p>		
<p>System Notification Management</p>	<p>BulkSMS</p>	
<p>Configure system notification events (e.g., low credit, high failure rate, routing issue). Create and manage notification templates (SMS, Email, Web alerts). Enable automated event-based notifications to users or administrators</p>	<p>BulkSMS</p>	
<p>Omni-Channel Messaging</p>	<p>BulkSMS</p>	
<p>The Bulk SMS platform shall support omni-channel communication capabilities enabling enterprises and partners to communicate with subscribers through multiple channels including SMS, USSD, RCS, OTT messaging applications (such as WhatsApp), push notifications, email, and voice. The platform shall provide a unified campaign management interface allowing operators to manage and control messaging activities across all supported communication channels.</p>	<p>BulkSMS</p>	
<p>Context-Based Campaign Triggering</p>	<p>BulkSMS</p>	

The system shall support context-based and event-driven campaign triggering mechanisms. Campaigns shall be automatically initiated based on predefined conditions such as subscriber behavior, balance thresholds, service usage patterns, location-based events, or other operator-defined triggers.	BulkSMS	
Subscriber Preference Management	BulkSMS	
The platform shall support subscriber preference management capabilities, allowing subscribers to configure their preferred communication channels and language settings. The system shall ensure that campaigns are delivered according to subscriber preferences whenever applicable.	BulkSMS	
Interactive Campaign Logic	BulkSMS	
The Bulk SMS system shall support interactive campaign workflows enabling subscribers to respond to campaign messages through SMS, other supported channels. Subscriber responses shall trigger predefined service actions such as service activation, subscription confirmation, promotional offers, or automated service workflows.	BulkSMS	
Provider / Partner Management	BulkSMS	
The platform shall provide a comprehensive partner management module enabling operators to manage enterprise customers, aggregators, and service providers. The system shall support configuration of partner accounts, throughput limits, quota allocations, sender ID management, API credentials, and service permissions.	BulkSMS	
Intelligent Routing & Channel Failover	BulkSMS	
The system shall support intelligent message routing and automatic channel failover mechanisms to ensure high delivery success rates. If delivery through the primary channel fails, the system shall be able to automatically redirect the message through alternative communication channels when configured.	BulkSMS	
Campaign Lifecycle Management	BulkSMS	
The platform shall support full campaign lifecycle management including campaign creation, approval workflows, scheduling, execution monitoring, performance analysis, and historical campaign reporting. The system shall maintain complete audit logs for all campaign activities.	BulkSMS	
Developer Portal & API Marketplace	BulkSMS	

The system shall provide a developer portal exposing secure APIs that allow enterprise systems, partners, and third-party developers to integrate messaging services with external applications. The platform shall support secure API authentication, rate limiting, and monitoring of API usage.	BulkSMS	
SMS Firewall & Fraud Protection	BulkSMS	
The Bulk SMS platform shall include integrated SMS security mechanisms including SMS firewall capabilities, grey route detection, sender ID validation, spam filtering, and abnormal traffic monitoring. The system shall ensure protection against fraudulent or unauthorized messaging traffic.	BulkSMS	
Enterprise Self-Service Portal	BulkSMS	
The platform shall provide a secure self-service portal enabling enterprise customers to independently manage messaging campaigns, upload contact lists, monitor campaign performance, track quota consumption, and access reporting information.	BulkSMS	
AI-Based Campaign Optimization	BulkSMS	
The Bulk SMS platform shall support AI-driven campaign optimization capabilities including automated segmentation, predictive analytics, engagement scoring, and campaign performance recommendations. The system shall analyze historical messaging performance and subscriber behavior to optimize targeting strategies, delivery timing, and message effectiveness.	BulkSMS	
Message Template Management	BulkSMS	
The Bulk SMS platform shall support centralized SMS template management, allowing operators and enterprise users to create, store, approve, and manage reusable message templates. The system shall support template approval workflows, version control, and role-based permissions to ensure compliance and consistent messaging standards.	BulkSMS	
URL Shortening and Click Tracking	BulkSMS	
The platform shall support integrated URL shortening for SMS campaigns containing links. The system shall generate trackable shortened URLs and provide analytics on link clicks, user engagement, and conversion rates to measure campaign effectiveness.	BulkSMS	
Contact List Deduplication and Data Cleansing	BulkSMS	
The Bulk SMS platform shall provide automated contact list validation and data cleansing capabilities during list uploads. The system shall detect and remove duplicate numbers, validate	BulkSMS	

number formats, filter invalid MSISDNs, and identify blacklisted or restricted numbers before campaign execution.		
Message Retry Mechanism	BulkSMS	
The system shall support automatic retry mechanisms for messages that fail due to temporary network issues or SMSC delivery delays. Retry rules shall be configurable based on delivery status codes, retry intervals, and maximum retry attempts.	BulkSMS	
USSD	USSD	
<p>The solution shall provide a high-performance USSD Gateway and Service Creation Environment capable of delivering carrier-grade USSD services.</p> <p>Architecture & Scalability: Carrier-grade architecture with redundancy and geo-redundancy for disaster recovery. The platform shall support scalable growth beyond 5000 TPS and handle high concurrent session volumes.</p> <p>Core Network Integration: Full integration with MSC, HLR/HSS, IN/OCS, SMSC, IVR, Billing, CRM, and VAS systems to ensure seamless session control, charging validation, and service execution.</p> <p>Protocol Support: Support industry-standard telecom protocols including CAMEL, MAP, SIP, and Diameter.</p> <p>External Menu Proxy Support: Provide proxy capabilities to host or route external USSD menus securely, enabling integration with third-party applications and partner platforms.</p> <p>APIs & Connectors: Expose secure APIs and integration connectors for third-party applications, partners, and digital services.</p> <p>The platform shall ensure high availability, session reliability, real-time performance monitoring, and full audit logging aligned with telecom-grade operational standards.</p>	USSD	
Core Features	USSD	

The USSD platform shall provide carrier-grade functionality, flexibility, and operational control with the following capabilities:

Service Creation Environment (SCE):

GUI-based drag-and-drop interface for rapid service design, testing, and deployment. Support easy modification of menu structures, copy/clone menu pages, search menus by code or name, and export/import menu configurations. Automatic backup and restoration of configurations shall be supported.

Session & Menu Management:

Intelligent handling of concurrent sessions with configurable session timers. Support multi-level dynamic menus, dynamic menus based on subscriber profile (service class), status or location, scheduled menu replacement, push menus, and direct short codes. Allow seamless navigation to and from third-party platforms within the same session until action completion. Provide full tracking of user requests and responses, flexible request/response parsing, and activate/deactivate menu and direct codes.

Multi-Channel Access & Network Independence:

Support multiple short codes for both consumer and enterprise USSD services. The platform shall be network-independent, functioning on both feature phones and smartphones regardless of operating system.

Charging & Billing:

Real-time prepaid charging integration via OCS, event-based billing, and flexible tariff configuration for enterprise services.

Reporting & Analytics:

Real-time dashboards displaying TPS load, active sessions, and failures. Support MSISDN-level reporting (not only service-based) to analyze overall customer consumption and behavior. Reports must be exportable in CSV, Excel, and PDF formats.

High Availability & Monitoring:

Carrier-grade architecture with clustering and geo-redundancy targeting 99.999% uptime. Support SNMP monitoring, alarms, and operational alerts.

Language & Localization:

Full multi-language support (Arabic, English, etc.) with no limitation on Arabic menu handling and the ability to extend Unicode character length where required.

The platform shall ensure scalability, reliability, configurability, and telecom-grade operational standards.

USSD

Advanced / Global Best-Practice Features	USSD	
<p>The USSD platform shall support advanced, future-ready capabilities aligned with global telecom standards and digital transformation initiatives:</p> <p>USSD over IP / LTE / 5G Readiness: Support IMS/SIP-based USSD over IP for next-generation networks, ensuring compatibility beyond traditional SS7/MAP environments.</p> <p>Virtualized / Cloud-Native Architecture: NFV-ready and cloud-deployable architecture supporting containerization, elastic scaling, and efficient resource utilization.</p> <p>Flexible Enterprise APIs: Expose secure northbound REST APIs to enable integration with banks, fintech companies, enterprises, and third-party developers.</p> <p>Advanced Security Controls: Built-in fraud detection mechanisms, role-based access control (RBAC), full audit trails, and support for end-to-end encryption for sensitive financial or enterprise services.</p> <p>Service Innovation Tools: Enable dynamic menu updates without service downtime, automatic language detection and personalization, and SMS/IVR fallback mechanisms for failed or incomplete USSD sessions.</p> <p>Monitoring & Intelligence: AI-driven traffic prediction, anomaly detection, and subscriber journey analytics to optimize menu structures, navigation paths, and service performance.</p> <p>Enterprise & B2B Enablement: Support dedicated enterprise short codes, enterprise self-care portals, configurable SLAs, and automated revenue-sharing and settlement capabilities.</p> <p>The platform shall ensure long-term scalability, security, innovation readiness, and alignment with global telecom best practices.</p>	USSD	
Performance, Monitoring & Reliability	USSD	

<p>The USSD platform shall provide comprehensive Performance, Monitoring, and Reliability capabilities to ensure high availability and operational excellence.</p> <p>Real-Time Traffic Monitoring: Live monitoring of active traffic, TPS load, and concurrent sessions.</p> <p>Live Trace: End-to-end transaction tracing for real-time troubleshooting and diagnostics.</p> <p>System Health Monitoring: Continuous monitoring of CPU, memory, storage, database, and application components.</p> <p>Service Monitoring: Health and performance monitoring per USSD service and short code.</p> <p>License Monitoring: Real-time tracking of license utilization with threshold alerts.</p> <p>Requests & Responses Dashboard: Visibility of successful and failed transactions with detailed failure reasons.</p> <p>Performance Dashboard: Metrics including concurrent sessions, response time, TPS capacity, and latency trends.</p> <p>Alarm Notifications: Configurable alerts via SMS, email, and web interface for critical, major, and minor events.</p> <p>The platform shall provide configurable thresholds, historical reporting, and audit logging to support proactive issue detection, capacity planning, and reliable service delivery.</p>	<p>USSD</p>	
<p>Reporting & Analytics</p>	<p>USSD</p>	

The USSD platform shall provide comprehensive Reporting and Analytics capabilities with real-time dashboards and historical reporting to support operational monitoring and business insights, not limited to:

Real-Time Dashboards: Display TPS load, active sessions, live traffic, response time, and failure rates.

Total Requests Reporting: Provide aggregated reports of total requests (successful, failed, and rejected with reasons) on minute, hourly, daily, weekly, monthly, and yearly intervals.

Per-Shortcode & Per-Service Reports: Detailed breakdown of requests per shortcode and per service (success, failure, rejection with reasons) across configurable time ranges (minute to yearly).

License Utilization Reporting: Monitor and report license usage levels with threshold tracking.

Response Mapping Details: Report response messages and codes for full visibility of transaction outcomes.

Service Status Reports: Monitor and report service availability status (up/down) with historical tracking.

The reporting module shall support data export in CSV, Excel, and PDF formats, provide filtering and drill-down capabilities, and maintain full audit traceability for compliance and operational control.

USSD

Intelligent Load Balancing

USSD

The USSD platform shall support intelligent load balancing mechanisms across multiple USSD nodes to ensure efficient traffic distribution and optimal system performance during peak usage periods. The system shall automatically distribute session requests across available nodes while maintaining session continuity and minimizing service latency.

USSD

Full USSD Session Audit Trail

USSD

The platform shall provide comprehensive USSD session tracking capabilities, maintaining a complete audit trail of subscriber requests, menu navigation paths, system responses, and transaction outcomes. This functionality shall support operational troubleshooting, service optimization, compliance auditing, and fraud investigation.

USSD

Rate Limiting per Service / Short Code

USSD

The system shall support configurable rate limiting mechanisms at the service and short code level to control traffic loads and prevent abuse. Operators shall be able to define TPS limits per service, enterprise partner, or short code to ensure fair resource allocation and maintain network stability.

USSD

USSD as a Service (UaaS)

USSD

The platform shall support USSD as a Service (UaaS) to enable enterprises, fintechs, and third-party partners to consume USSD capabilities through a managed, scalable, and secure service model.

The UaaS solution shall provide:

Dedicated or Shared Short Codes: Configurable per enterprise with logical traffic isolation.

Self-Service Enterprise Portal: Allow partners to design menus (subject to approval), monitor traffic, and view reports.

Secure API Integration: Northbound REST APIs for service integration, request handling, and callback mechanisms.

Flexible Commercial Models: Pay-per-session, revenue-sharing, or enterprise fixed-fee billing models.

Traffic Control & SLA Management: Configurable TPS limits per partner with SLA monitoring and reporting.

Multi-Tenant Architecture: Logical separation of enterprise environments while sharing core infrastructure securely.

Real-Time Charging Integration: Support prepaid, postpaid, and enterprise billing integration.

Comprehensive Reporting: Per-enterprise dashboards including requests, success/failure rates, session duration, and revenue reports.

Security & Compliance: Role-based access control, encrypted communication, audit logging, and fraud monitoring.

The UaaS platform shall ensure carrier-grade availability, scalability, and reliability, enabling rapid onboarding of enterprise customers while maintaining operational governance and network stability.

USSD

IVR

IVR

Customer Experience Requirements

IVR

Caller Identification

IVR

The IVR platform shall support advanced caller identification and subscriber profile management capabilities to ensure personalized and secure service delivery.

The system shall:

Support automatic caller identification using CLI/MSISDN for inbound calls.

Retrieve subscriber profile information in real time from the SDP, including:

Subscriber type (prepaid, postpaid, hybrid)

Active subscriptions

Language preference (if stored)

Segment classification

Provide a fallback identification mechanism when CLI is unavailable, allowing manual MSISDN entry.

Support secure authentication mechanisms (e.g., PIN or OTP) for sensitive transactions such as subscription changes, billing inquiries, or account updates.

Handle anonymous or restricted CLI calls with controlled or limited service access based on predefined business rules.

The platform shall ensure secure data exchange, real-time synchronization with backend systems, and full audit logging of identification and authentication events.

IVR

IVR Multi-Language Support

IVR

The IVR platform shall support comprehensive multi-language capabilities to ensure an inclusive and personalized customer experience.

The system shall:

Provide configurable multi-language IVR menus with flexible routing per language.

Support automatic language selection based on subscriber profile information retrieved from SDP.

Allow manual language override by the caller at any time during the session.

Maintain separate content libraries per language, including prompts, announcements, and menu structures.

Enable independent prompt management per language, allowing updates without impacting other language flows.

Support seamless expansion to additional languages without requiring core system redesign or service interruption.

The platform shall ensure accurate voice prompt playback, consistent navigation logic across languages, and scalable localization management aligned with operator requirements.

IVR

IVR Content Navigation

IVR

The IVR platform shall provide intuitive and flexible content navigation capabilities to enhance user experience and service efficiency.

The system shall support:

Structured content browsing by category and subcategory.

Dynamic menu generation based on available and eligible content.

Configurable maximum menu depth to prevent excessive or complex navigation paths.

Content preview functionality (full or partial preview) prior to subscription or purchase.

Clear pricing announcements before any chargeable action.

Seamless return to previous menu options without restarting the session.

Shortcut navigation options, such as replaying last content or accessing recently selected content.

Fast content selection mechanisms to minimize unnecessary re-navigation steps.

Session continuity, allowing the caller to continue from the last interaction point of their previous call (where applicable).

The platform shall ensure smooth navigation flow, minimal call duration overhead, and consistent user experience across services.

IVR

IVR Personalization	IVR	
<p>The IVR platform shall support advanced personalization capabilities to deliver context-aware and targeted customer experiences.</p> <p>The system shall support:</p> <ul style="list-style-type: none"> Dynamic menu customization based on: <ul style="list-style-type: none"> Active subscriptions Subscriber segment classification Usage behavior and historical interaction patterns Campaign eligibility rules Proactive highlighting of renewal options for subscriptions nearing expiry. Suppression of ineligible content offers based on subscription status, balance, or campaign rules. Recommendation logic integration with the SDP campaign or decision engine for real-time offer selection. Personalized promotional announcements tailored to subscriber profile and behavior. Behavioral targeting, such as suggesting similar content categories based on previous selections or preferences. <p>The platform shall ensure real-time synchronization with backend systems, enabling intelligent, data-driven IVR interactions that improve engagement and conversion rates.</p>	IVR	
Content Management Requirements	IVR	

IVR Content Upload & Management

The IVR platform shall provide comprehensive content upload and lifecycle management capabilities to ensure efficient and controlled audio content operations.

The system shall support:

Web-based content management portal for authorized users.

Audio file upload in supported formats (e.g., WAV, MP3).

Automatic format validation and compatibility checks upon upload.

Bulk upload capability for multiple audio files.

Version control for content updates with change history tracking.

Activation/deactivation of content without permanent deletion.

Scheduling of content availability using configurable start and end dates.

Role-based access control (RBAC) for content managers and administrators.

Content update notifications to relevant stakeholders upon upload, modification, activation, or expiry events.

The platform shall ensure secure content handling, audit logging, and operational flexibility while maintaining service continuity.

IVR

IVR Content Tagging

The IVR platform shall support flexible and structured content tagging capabilities to enable efficient classification, targeting, and menu presentation.

The system shall allow metadata tagging for each content item, including:

Language

Category and subcategory

Price

Charging model

Validity period

Target subscriber segment

Campaign ID

Ad-supported flag

Priority ranking for menu display

Age restriction flag (where applicable)

Tags shall be editable without impacting existing subscription records or active entitlements. The platform shall ensure that tag modifications dynamically update content visibility, targeting rules, and menu placement without requiring content re-upload or service interruption.

IVR

IVR Campaign & Outbound Engagement Management

The IVR platform shall support the configuration, execution, and monitoring of promotional and outbound engagement campaigns for content services, including the following:"
Configuration of promotional campaigns via a business user interface.
Free trial setup with defined duration.
Time-bound offers with automatic start and expiry dates.
Discount configuration (percentage-based or fixed-price).
Promotional bundle configuration.
Priority placement of specific content within IVR menus during campaign periods.
Activation and deactivation of campaigns without system downtime.
Campaign rollback capability with immediate effect.
"Segment-based targeting rules based on subscriber type (prepaid/postpaid), active or inactive subscription status, usage behavior, language preference, and campaign eligibility retrieved via SDP."
Suppression rules to exclude ineligible or already subscribed users.
Configurable eligibility validation prior to offer presentation.
Dynamic campaign logic driven by the SDP decision engine where applicable.
Scheduled outbound IVR calls for campaign promotion or content delivery.
Configurable delivery time windows.
Time-zone awareness where applicable.
Controlled dialing rate to prevent network congestion.
Retry attempts for no answer, busy, or temporary failure scenarios.
Automatic stop after a defined retry threshold.
Detection of answered versus failed calls.
Immediate content playback upon successful call answer where applicable.
Subscriber opt-in and opt-out management.
Easy unsubscribe mechanism during outbound IVR calls.
Real-time update of opt-out status in relevant systems.
Compliance with Do-Not-Disturb (DND) regulations.
Storage of campaign interaction logs.
Configurable prompt creation and uploading for campaign-specific IVR flows.
Multi-language campaign prompt support.
Preview and testing of prompts before activation.

IVR

<p>Version control for campaign prompts. Scheduling of prompt activation and deactivation. Reporting on outbound attempts. Reporting on successful deliveries and subscriptions. Reporting on failure reasons (no answer, busy, network error, rejected, insufficient balance). Reporting on call answer rate. Reporting on offer acceptance rate. Reporting on subscription conversion rate. Reporting on revenue generated per campaign. Reporting on retry performance metrics. Campaign ROI tracking. Exportable reports and dashboard access. Role-based access control for campaign configuration. Optional approval workflow before campaign launch. Real-time campaign pause capability. Audit trail of all campaign configuration changes. Maximum concurrency limits to protect system performance.</p>		
<p>Subscription & Charging Requirements</p>	<p>IVR</p>	
<p>Eligibility Validation The IVR platform shall support comprehensive eligibility validation mechanisms to ensure accurate subscription processing and prevent revenue leakage. The system shall perform real-time eligibility checks via SDP prior to charging or service activation. Validation shall include: Sufficient balance verification for prepaid subscribers. Credit limit validation for postpaid subscribers. Existing active subscription check to prevent duplicate enrollments. Segment eligibility validation based on campaign or service rules. Device or service compatibility verification (where applicable). The platform shall provide clear and user-friendly error messaging for ineligible cases, informing the subscriber of the reason for rejection. The system must automatically prevent duplicate subscriptions and enforce defined business rules, ensuring accurate entitlement management and regulatory compliance.</p>	<p>IVR</p>	

Charging Models & Consent Capture	IVR	
<p>Charging Models</p> <p>The IVR platform shall support SDP-integrated charging models to enable flexible monetization and accurate billing. The system shall support:</p> <ul style="list-style-type: none"> Subscription-based charging (daily, weekly, monthly). One-time purchase charging (event-based billing). Free trial configuration with automatic conversion (where applicable). Micro-charging and fallback charging (if enabled in SDP). Real-time prepaid charging via OCS integration. Postpaid billing record generation (CDR-based). <p>All charging operations shall be validated in real time via SDP prior to service activation.</p>	IVR	
<p>Consent Capture</p> <p>The platform shall implement a compliant and secure consent capture mechanism before any charge is applied.</p> <p>The system shall support:</p> <ul style="list-style-type: none"> Mandatory price announcement prior to charging. Explicit user confirmation via DTMF input or voice confirmation. Configurable consent message text based on campaign or service type. <p>The platform shall securely store consent records including:</p> <ul style="list-style-type: none"> Timestamp MSISDN Content ID / Service ID Price Transaction ID <p>Consent logs shall be retrievable for dispute resolution, regulatory audits, and compliance verification.</p> <p>The system must strictly prevent charging without confirmed and recorded user consent, ensuring regulatory compliance and customer protection.</p>	IVR	

Real-Time Fulfillment

The IVR platform shall support real-time service fulfillment to ensure immediate and seamless subscriber experience upon successful charging.

The system shall support:

Immediate content activation upon successful charge authorization.

Real-time entitlement update in SDP to reflect subscription status.

Content playback access within the same call session, where applicable.

Voice confirmation of subscription activation, renewal, or status change during the call.

Optional SMS confirmation including:

Service name

Price

Renewal terms

Clear unsubscribe instructions

The platform shall provide clear failure handling, including informative voice prompts explaining the reason for failure (e.g., insufficient balance) and guidance for retry or corrective action.

All fulfillment actions shall be synchronized in real time with backend systems to ensure accuracy, consistency, and compliance.

IVR

Content Delivery Requirements

IVR

On-Demand Playback

The IVR platform shall support on-demand playback capabilities to ensure high-quality and responsive content delivery.

The system shall support:

Instant playback initiation upon user selection.

Minimal latency between content selection and audio playback start.

Pause and resume functionality within the same session (where supported).

Stable audio playback without distortion, buffering, or degradation.

Configurable maximum playback duration per content item or session.

Retry mechanism for interrupted sessions due to network or call drops.

Detailed logging of playback events, including duration, completion status, and interruption reasons.

The platform shall ensure carrier-grade audio performance and accurate playback tracking for analytics and reporting purposes.

IVR

Advertisement Support

The IVR platform shall support comprehensive advertisement capabilities to enable monetization and targeted promotional delivery.

The system shall support:

Pre-roll ad insertion before content playback.

Mid-roll ad insertion during content playback (where applicable).

Sponsored message announcements within IVR flows.

Configurable ad frequency caps per MSISDN to prevent overexposure.

Segment-based ad targeting based on subscriber profile, usage behavior, or campaign eligibility.

Revenue tracking for ad impressions, including impression count, playback completion, and associated revenue.

Ad campaign scheduling and activation, with defined start/end dates and real-time enable/disable capability.

The platform shall ensure real-time ad selection logic, compliance with user consent rules, and detailed reporting for campaign performance and monetization tracking.

IVR

Reporting & Analytics Requirements

IVR

The IVR platform shall provide comprehensive reporting capabilities covering revenue performance, usage analytics, and financial reconciliation to ensure operational transparency and accurate revenue tracking.

IVR

Revenue Reporting

The platform shall support reporting on:

Total subscription volume.

Revenue by content category.

Revenue by language.

ARPU contribution from IVR content services.

Renewal versus new subscription split.

Campaign-driven revenue performance.

Reports shall be exportable in standard formats (CSV, Excel, PDF) with configurable date ranges and filtering options.

IVR

<p>Usage Reporting The platform shall support detailed usage analytics, including: Total listening duration. Average session length. Content completion rate. Drop-off stage tracking within IVR flows. Peak traffic periods. Most accessed content ranking. Churn analysis (subscription cancellation rate). The system shall provide dashboards and drill-down capabilities for behavioral insights and service optimization.</p>	<p>IVR</p>	
<p>Reconciliation Reporting The platform shall support financial and operational reconciliation reporting, including: Transaction-level reporting with unique transaction IDs. Alignment of IVR interaction logs with SDP charging records. Daily reconciliation summaries. Exception reporting for failed, reversed, or disputed transactions. Audit-ready data exports suitable for finance and regulatory compliance. The reporting framework shall ensure data integrity, traceability, and accurate revenue assurance aligned with telecom-grade operational standards.</p>	<p>IVR</p>	
<p>Integration Requirements</p>	<p>IVR</p>	

<p>SDP Integration</p> <p>The IVR platform shall support secure and real-time API integration with SDP to ensure synchronized service execution and charging control.</p> <p>The system shall support:</p> <ul style="list-style-type: none"> Real-time subscriber profile retrieval. Product catalog retrieval for dynamic content presentation. Real-time charging requests (prepaid/postpaid validation). Subscription lifecycle management (activation, renewal, suspension, cancellation). Entitlement validation prior to content access. Integration with campaign/decision engine for dynamic offer selection. High-availability connection management with automatic failover and retry mechanisms. All integrations shall ensure encrypted communication, low latency, and full transaction traceability. 	IVR	
<p>VAS Platform Integration</p> <p>The platform shall support integration with internal and external VAS ecosystems, including:</p> <ul style="list-style-type: none"> Integration with external content hosting platforms. Integration with third-party content providers. Secure content retrieval mechanisms. Standardized API interfaces for rapid onboarding of new partners. Performance monitoring of external integrations (latency, availability, error rate). SIP trunk integration with IVR platforms for voice connectivity and scalability. The integration layer shall ensure secure connectivity, authentication controls, and performance visibility. 	IVR	

API-Based Architecture

The platform shall adopt a modular, API-driven architecture to ensure flexibility and scalability.
The system shall support:
Modular service architecture enabling independent service components.
API-driven onboarding of new services and content.
Minimal IVR flow redesign when adding new content or campaigns.
Version-controlled API management to prevent service disruption.
Comprehensive API documentation for third-party integration.
Backward compatibility support for legacy integrations.
The architecture shall ensure high availability, extensibility, and future-readiness aligned with telecom-grade standards.

IVR

Compliance & Governance

IVR

The IVR platform shall implement comprehensive compliance and governance controls to ensure regulatory adherence, customer protection, and audit readiness.

IVR

Regulatory Compliance

The platform shall support:
Mandatory price transparency prior to any chargeable action.
Easy unsubscribe option available during every session.
Compliance with local telecom regulations and operator policies.
Adherence to data protection and privacy regulations, including secure handling of subscriber data.
Configurable regulatory announcement templates for mandatory disclosures.
DND (Do-Not-Disturb) list validation prior to outbound IVR calls or promotional interactions.
The system shall ensure that no chargeable or promotional action is executed without meeting regulatory and eligibility requirements.

IVR

Audit Trail

The platform shall maintain a comprehensive audit framework, including:
Full subscription lifecycle tracking (activation, renewal, suspension, cancellation).
Detailed charging transaction logs with unique transaction identifiers.
Secure consent capture logs for dispute resolution and compliance.
Playback access logs for content consumption tracking.
Complete user action history (administrative and subscriber-level interactions).
Secure log retention aligned with regulatory data retention policies.
Controlled, role-based access to audit records to prevent unauthorized viewing or modification.
The governance framework shall ensure transparency, traceability, and regulatory readiness aligned with telecom-grade standards.

IVR