

# **Vittotel Technologies**

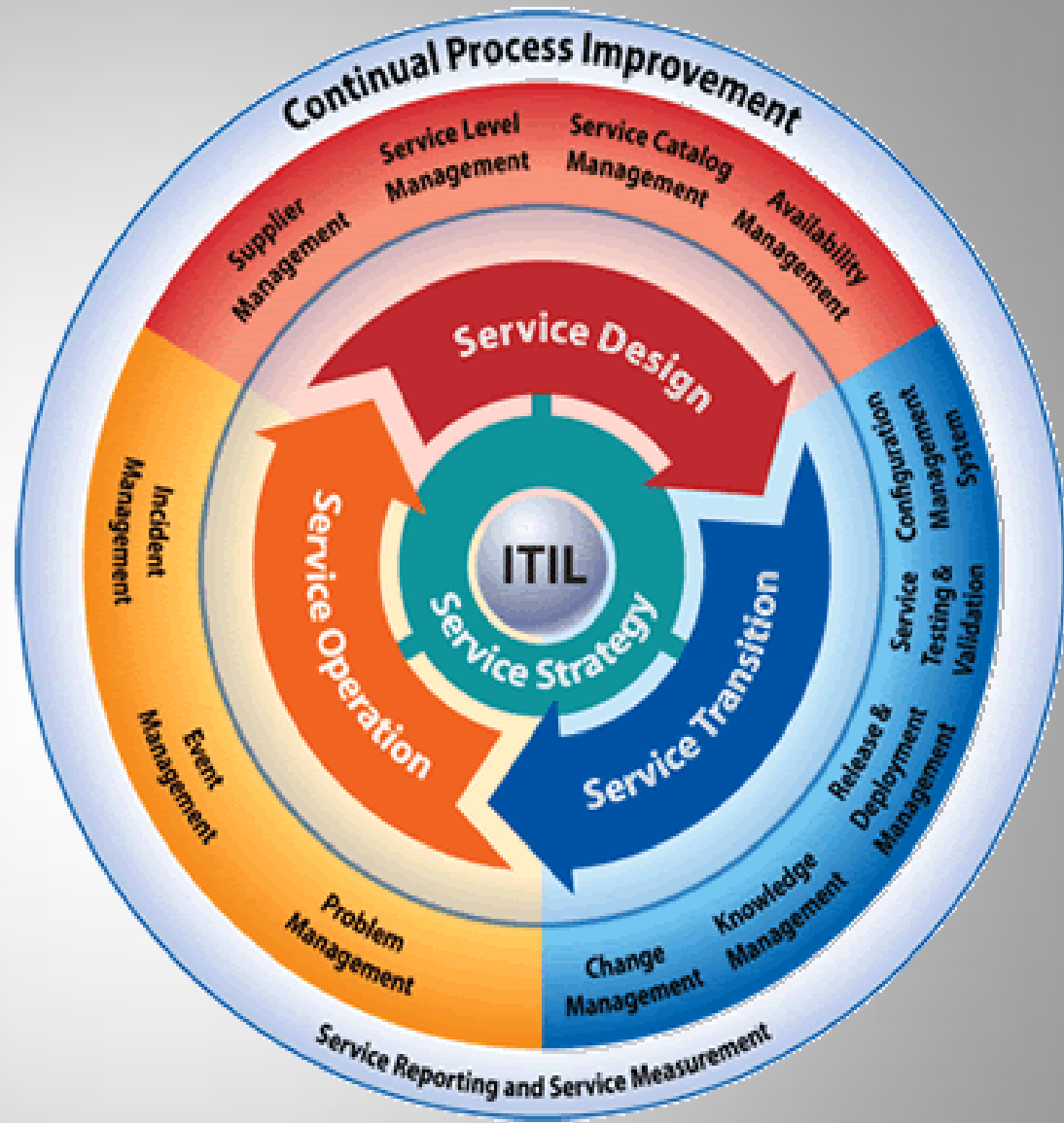
Next Generation Mobile Network Solutions,  
Design & Consultancy

## About Us

Vittotel Technologies is a Telecommunication Consultancy focussed on delivering Mobile Network solutions based on Next Generation Mobile Technologies based on 3GPP standards. Vittotel Technologies collaborates with Clients to help them become high-performance businesses. We also partner with Mobile Operators and Vendors to provide expertise and additional resource on big, complex and turn-key projects. We possess excellent track records of understanding our clients needs and helping them translate their business requirements into technical solutions. Our clients outsource detailed tasks and work packages to us so they can focus on their strengths and unique capabilities.

# Delivery

- Our delivery is fully compliant to ITIL Framework.
  - Service Strategy
  - Service Solution and Design
  - Service Transition
  - Service Operation
  - Continual Service Improvement
- Our approach is to position Consultants in clients premises through the project's life cycle – take us as their trusted advisor and partner.
- Our solutions are based on industry standards and interfaces which ensure inter-operability, interworking and multi vendor kit deployment.
  - 3GPP, IETF, IEEE, GSMA, ITU-T



# Technologies, Solutions and Features Synopsis

- Network
  - CS and PS Core Network, IPRAN, Intelligent Network, **Mobile Broadband**, Wireless Transmission Networks
  - Emergency Services Communication Network – Police, Fire Services, Ambulances, Natural Disaster
- Technology
  - GERAN (2G/2.5G), UMTS (3G), HSPA(3.5G), LTE/EPC (4G),
  - Machine to Machine (M2M)
  - VoIP/SIP Solutions (Over The Top Communications)
  - Small Cell
  - IMS
  - WLAN (Wi-Fi)

# Technology, Solutions and Features Synopsis

- Synopsis of Features
  - Mobile Broadband
  - Mobile Softswitch Solution
  - Mobile Number Portability
  - OTT Integration to legacy Core Network
  - Policy Control and Rules Function
  - Deep Packet Inspection
- Function
  - OSS/BSS – Performance Management, Fault Management and Configuration Management

# Protocols and Standards

- We deliver our solutions based on the following industry standard protocols: 3GPP, ITU-T, IETF, GSMA, IEEE.
- Signalling
  - Core Network: SS7 and SIGTRAN: MAP, CAP, INAP, TCAP, SCCP, ISUP, MTP3, M3UA, SCTP, BSSAP (+), BSSGP, GCP, IPBCP, H.248, BICC
  - Access Network: RANAP, SAAL
- Session Initiation Protocol (SIP) and related protocols: SDP, RTP, RSTP, H.323
- RADIUS (AAA), DIAMETER
- Voice and Video CODECS: G.711, G.722.2 (AMR-WB), G.726, G.729, H.264/MPEG-4 AVC.
- GPRS Tunnelling Protocol (GTP – U/C)
- Solution Compliant to the full suite of the OSI.
- IP – Routing and Switching – EIGRP, OSPF, BGP
- Layer 2 Technologies: VLAN, Frame Relay, ATM, Wi-Fi (WLAN)

# PS Core Network Solutions

- Mobile Broadband Solution using 3G, HSPA, LTE technologies
- End to End Detailed Design of Nodal interfaces
- PS Core Network – Interface design comprising SGSN, GGSN, MME, SGW, PGW, PCRF, HSS nodes and PDN.
- Offline/Online Charging
- Policy Control and Rules Definition and Implementation
- Deep Packet Inspection
- Service Aware Charging and Control
- Service Aware Policy Control

# CS Core Network Solutions

- Mobile Softswitch Solutions (MSS) – IP enabled layered CS Core Network Architecture.
  - MSC-S, MGW
- MSS Features: Iu Flex, A-Flex (MSC-S in Pool), Advanced MGW selection
- Multi Operator Core Network (MOCN)
- SS7 and SIGTRAN Network Design
- HLR Designs and Parameterization – Subscriber Profile Definitions, Mobility Management and Value Added Services
- Mobile Number Portability
- Intelligent Network Design – Prepay Solutions, Flexible billing and Charging, Number Translations, Fraud Prevention, Next Generation IVR / OCMP.



# Consultancy

- Use our in-depth industry knowledge and technical expertise, help our clients to:
  - Shape business direction
  - Improve service portfolio
  - Be the Single Point of Contact and liaison for their own clients – Contract negotiation, RFI/RFP/RFQ review and assessment formulation of policies, SLA agreements, management of 3<sup>rd</sup> parties delivers in accordance to business drivers
  - Be the rallying point internally for cross organizational collaboration for large and complex projects.
  - Diligently select Vendors and manage their activities in projects/programmes
  - Define technological roadmaps
  - Introduce new technologies including Design
  - Conduct feasibility studies and Impact Assessment
  - Increase revenues in existing markets
  - Venture into new markets.
  - Improve operational performance.
  - Deliver their products and services more effectively and efficiently.
  - Stay ahead of competition
  - Audit their Network Performance and Capability for Continual Service Improvement

# Turnkey Projects

Vittotel Technologies provides clients with the opportunity to outsource full or partial Turnkey projects or opt to ring fence work packages that can be implemented by a team of Managed Resource.

## Turnkey Projects:

- Vittotel Technologies has an in house expertise dedicated to the implementation of turnkey projects and provision of resource management, irrespective of size and scope. The expertise within the department has the capability of implementing Multi-Vendor, Multi-Technology projects within the UK mainland or internationally.

## Engagement Options available:

- Outsource projects directly to Vittotel Technologies which will be managed and co-ordinated on a turnkey basis for delivery of client work packages.
- Provision of a professional team on customer premises to implement projects which can be managed locally by the customer
- Deployment of management and technical resource at customer premises to manage projects on behalf of the customer

# Resource Managed Services

Vittotel Technologies enables the client to focus on their areas of strength, capitalize CAPEX/OPEX by providing the project management teams or individual professionals to implement customer work programs.

## Resource Implementation

- Provision of qualified resource throughout the lifespan of longer turnkey projects
- Delivery of engineers in situations where skills are in short supply on clients premises.
- Delivery of quality professionals for expertise-specific roles after client consultation.
- Engage with third parties (Vendors, OEMs, Service providers) on behalf of clients to ensure project deliveries are within scope, time, budget and quality (Desired by most clients) – Review RFI/RFP, SLA, High Level and Low Level Designs, Feasibility Reports; Due diligence etc.
- Partnership with client to provide expertise and be trusted advisor to throughout project's lifetime.

# Professional Portfolio

- Packet Switched Core Consultants
- Circuit Switched Core Consultants
- Business Service Support (BSS) Consultants
- Operation Service Support (OSS) Consultants
- Solution Architect and Designers
- Project Managers

# Service Benefits offered to Clients

- Business requirements translation into technical design/solution.
- Information gathering and analysis
- Technical Specification, Requirements Specification, Scope of Work definition
- Business Analysis – Production of Business Cases and feasibility reports
- Facilitating the production of response to Tenders, Proposals
- Production of High and Low (Detailed) Level Design documents
- Parameterization of Network Elements – NDD
- Configuration Management, Performance Management and Fault Management
- End to End Network Strategy, Process and Performance Audit
- Impact Assessment and Detailed Impact Assessment Report
- Vendor Selection Process and the management of their activities within the overall programme
- Coordinated Proof of Concepts and User Acceptance Tests
- Test Planning and Coordination: Operational Readiness Testing, Load Testing, Acceptance Testings etc.
- Software Development lifecycle – Alpha, Beta and Gamma testings
- Professional presentations on behalf of Clients at third parties, conferences etc.
- Standardisation and interpretation of processes, frameworks, methodology and specifications
- Standardisation of quality across multi vendor service suppliers
- Pro-active early capture of possible future network requirements and issues

## Synopsis of Customer Projects

- **Telefonica UK:** Consultancy to provide techno-commercial expertise for the £10 million Unified Communication: OTT platform integration with the legacy mobile network project. Gathered and refined requirements: Strategy /concept, solution architecture/Design, Software development lifecycle to Testing and Commissioning . Managed the Design Phase, Implementation and Tests: Acceptance, Operational Readiness, Exit Tests, Load Tests in the testbed, FOA and Live. Designed the Intelligent Network Orchestration requirements using – CAMEL, MAP, ISUP protocols. Produced Call Flow/Logic Design, Testbed Design. Provided Solution options and recommendations based on long term business strategy for the project. Engaged with business stakeholders, vendors and technical partners to realize the strategic goals for the project.
- **IP.Access:** Consultancy to design and adapt 3GPP's Iu-Flex and MOCN features in IP Access' Femtocell HNB and HNB-Controller. Provided strong technical and Project Management services. Project Worth: £5 Million

## Synopsis of Customer Projects

- **Telefonica Germany:** Consultancy to improve the Mobile Broadband (MBB) service offering to meet with defined business drivers: CAPEX and OPEX efficiency, improved service availability, capacity, throughput, improved ARPU, increased market share, improved customer experience/satisfaction and loyalty, positioning for Next Generation Mobile Broadband technologies.
  - Strategy formulation, End to End Design, transition and migration planning, testing and roll out.
  - Executed Solution on 3G-E IPRAN Hybrid Iub (ATM & IP) based on RAN11.0 software version; Iu-PS over IP; using Huawei's kit: RNC (BSC 6810), NodeB (BTS 3900) and SGSN (9810) – Implemented Signalling over IP (SCTP/IP), Traffic Offloading and Traffic shaping, Flow and Load Control, Improved Call Admission Control Algorithm, specification of configuration, fault and performance management parameters.
  - Migrated the RAN software version from RAN10.0 to RAN11.0 to support HSPA+ and 3G-Ethernet Hybrid Iub (IPRAN).

## Synopsis of Customer Projects.

- **Arqiva:** Consultancy to develop Packet Core LTE/EPC architecture design options for mobile broadband solution in rural UK. It is a £500 million rural broadband initiative by the United Kingdom's BBUK to ensure internet broadband access in all areas in the UK by 2015.
- **Batelco Bahrain:** Consultancy for End to end Network Strategy and Performance Audit. Objectives: Evaluate technical performance, make recommendation to improve the network quality to improve ARPU/EBITDA, enhance customer satisfaction and loyalty, readiness for NG technology deployment and conformance to best industry practice.
- **Ericsson UK:** Managed Service to design and migrate the CS Core Network for T-Mobile UK using Ericsson kit in the UK and South Africa from legacy Core Network Architecture to Mobile Softswitch Solution.



# Partnerships, Collaboration and Managed Services

- We partner with Vendors, OEM and Service providers to implement our solutions – Deploying their kits/boxes.
- We also collaborate with other solution providers and consultancies who desire our unique expertise and experience in subject matters.
- Clients outsource specific work packages to us so as to focus on their core strengths – E.g. Due Diligence, Information Gathering, Feasibility studies, industry analysis, Design (HLD/LLD), Roll out, Operations
- We seek to expand our partnerships and collaboration.

## Clients

- Vittotel Technologies delivers network solutions for world's leading operators in the United Kingdom.
- Our objective is to span all geographic regions to provide bespoke telecommunication technology and solutions to enhance business.

# Further Contacts

- E-Mail: [info@vittotel.com](mailto:info@vittotel.com)
- Web-Site: [www.vittotel.com](http://www.vittotel.com)