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## Summary

Technically adept, innovative product and solutions professional with several innovations (granted patents) in Strategy, Standards, Technology Management, Product management, Big Data Analytics, Process Automation, Systems engineering, Wireless (3GPP LTE, 5GNR, Private 5G), RF Engineering, SW Development, SW integration.

## Experience

**Sr. Manager Consulting** at Cognizant (Jan 2025- now)

New technology research, evaluation, technology, solution consulting (HLD/LLD), Digital Twins, OSS/ BSS, TM Forum Level 4 automation, Open APIs, Palantir Foundry, Private 5G

**Principal Systems Engineer** at Dish Network (Contract) (March 2024-Dec 2024)
Vendor management and product management for RAN and EPC features
3GPP and ORAN counters, events, parameters for 5G SA network,, KPI formula validation.
Observability, analytics SW evaluation, trial and implementation,
E2E trouble shooting RAN-5GC-IMS using RADCOM.

**Lead solutions and product management** at Mavenir Systems (Nov 2020 –Feb 2024)
RAN and 4G/5G converged core product roadmap (3GPP features, containerization, security)
Containerized (CaaS, PaaS, Kubernetes, Calico) O-RAN, 5G, 4G, Private 5G, SA, NSA, CBRS, C Band, mmWave, massive MIMO solution architecture, HW, SW, Networking, HLD,LLD, 3GPP parameters, Radio parameters, VoLTE, VoNR calls, HW server based, Private cloud, AWS and public cloud, OSS/BSS installation-provisioning (APIs), user provisioning. Customer Dashboards for KPIs.

CUSM planes integration and troubleshooting, Viavi TM500, Keysight Prisma tools for ORAN and Core end to end test case preparation (RAN features, parameters, OS, Containerization test cases), test execution result documentation
ORAN and Core end to end test case preparation (RAN features, parameters, OS, Containerization-Windriver, Openshift test cases), test execution result documentation
Product SW, HW and feature management, interoperability with multiple EPC vendors (Druid, Polaris, Keysight) Ue emulatos (Keysight, Simnovus)

**Technical Program Manager** at Samsung (Worldlink) (Oct 2018-Oct 2020), Plano TX
5G, Massive MIMO (64x64,) NBIoT, CBRS gNB integration with various OEMs EPC.
CBRS LTE 3GPPparameter configuration and troubleshooting, communicating with R&D for bug fixing, new feature implementation, managed a team of four engineers.
Product management for RAN, core and EDGE application products for agricultural farm grid applications.
Defining solutions for private 5G networks, Edge cloud, applications for IoT, voice, data, video

**Director Wireless Access Network (product and engineering) at Charter Communications, Jan 2017 – Sept 2018, Centennial, CO**

Technical Program Management and product management for Charter communications' Wireless Network initiatives: RFI, RFP for WiFi (802.11 family-ac,ax,ay), Billing, AAA, HS 2.0 and 3GPP CBRS RAN, EPC and Roaming. MVNO integration

- ⇨ Architecture, budgeting and building wireless networks for Charter communications. Conducting Lab and field trial
- ⇨ Evaluating several CBRS RAN and Core network (EPC) vendors, Lab testing and Field testing
- ⇨ Participate in industry forums CBRS alliance, WiNN Forum, Cable Labs forums.
- ⇨ SAS (Spectrum Access System) evaluation, FCC license application, FCC compliance
- ⇨ Design (Atoll, Keima Overture), build, Optimization of CBRS LTE, WiFi network (802,11 family), Fixed Wireless Access, CPE network (TR069 provisioning and CPE OSS)
- ⇨ IoT technology strategy, 5G technology and spectrum strategy.
- ⇨ DOCSIS 3.0, 3.1, DOCSIS power supply, Synchronization, Low split, mid split and High split configurations, knowledge of DOCSIS provisioning and billing.
- ⇨ WiFi (802.11xx) network deployment, optimization, WiFi roaming policies, SIM card based WiFi roaming
- ⇨ X-Cal, X-Cap, Wireshirk, iPerf VoWiFi and VoLTE call test

**Senior Product Manager-RAN at Guavus Inc. March 2014 – Jan 2017, Frisco, TX.**

- ⇨ Big Data analytics in real time for Radio Access Networks.
- ⇨ Product Life Cycle Management, Product development road map, Data algorithms
- ⇨ SME for RAN(3GPP,3GPP2, IEEE, TM Forum) technology and use cases.
- ⇨ FM (Fault management-MIBs Traps, OIDs), PM (performance Management counters) CM (Configuration Management) TRACE (Ue Trace, eNodeB Trace, MME Trace) correlation
- ⇨ Data science, solutions development and dimensioning with Anomaly Detection, Root Cause Analysis and Exception reports on cloud portals and Dashboards
- ⇨ Radio network optimization based on user Agent, MIME type and Radio Resource utilization.
- ⇨ Statistical Inference, Regression models and Machine Learning
- ⇨ Data collection adapters, Compute ( Hadoop, Spark, Yarn, Map-Reduce), Data cubes storage HDFS
- ⇨ Assist SW Dev team in optimizing SW performance and the User Interface.

**Director of Technology and solutions at Mantra Telecom October 2010 – March 2014**

- ⇨ Lead the team for network architecture, network design and RF engineering (Atoll, CIQ,RFDS) for LTE networks and IEEE networks (WiFi and WiMAX), VoWiFi call test
- ⇨ Provide guidelines on DAS, Small Cells and WiFi networks. Samsung LTE Pico cell.
- ⇨ End to End call processing and Performance monitoring for LTE and WCDMA networks.
- ⇨ LTE protocol detailed analysis (Layer 2 Layer3, NAS, AS message analysis)
- ⇨ Hiring, training and mentoring engineers, Leadership/team management, motivating the team and performance evaluation of team members.

Sr. Engineer Systems / Strategy: Wireless Broadband, RAN & IBS **at T-Mobile USA, November 2003 - October 2010**

- ⇨ RAN strategy, Wireless broadband strategy, 3GPP, IEEE802.xx standards

- Research, technology evaluation, product evaluation, product management, network architecture, Case study, feasibility study and writing white papers on products and technologies.
- RAN tools evaluation, RAN vendor and features evaluation
- 3GPP, IEEE standards, RFCs and GSM, GPRS, EDGE, UMTS, LTE, Wi-Fi, UMA, WiMAX , LTE, and IP networks
- Spectrum evaluation, frequency planning, RAN planning and back haul dimensioning. Spectrum policy and technology
- . Expertise on several RF propagation tools such as: Planet, Atoll and Asset.
- Ethereal, Wireshark, Cognio, Ekahau, Airmagnet and other network monitoring and trouble shooting applications. Network Management applications.
  Atoll, EDX, Pathloss, Mesh planner for network design.
- Lab testing and certification DAS vendors and repeater vendors, Standardized DAS vendors and equipments with respect to E-911 architecture. Designed DAS test bed in T-Mobile lab.
- Analyzing the product and feature requirements (FRD), working with OEMs to implement test cases and execute test plan (new and regression) to ensure product feature and quality maintained.

## Major projects Undertaken and successfully executed

- Delivered White labeled Big data Analytics product for a large wireless OEM with Network and customer experience management. (SW Components: Hadoop, Spark, Kafka, Flume, Java, HIVE, JSON) (2014-2015)
- Strategic Consulting to Samsung Telecom for Sprint Network Vision for DAS and LTE Small Cells, (2012- 2013)
- Designed, deployed and optimized (15 member team) more than 250 SON capable small cells in a square mile (Disney Land). Indoor and outdoor deployments, Network design (L2 and L3 equipment, switches and routers), RF engineering, Interference mitigation and optimization.
- DAS integration with CDMA, EVDO and LTE networks with E911 and NOC connectivity (2012)
- DAS test bed for multiple DAS OEM testing in T-Mobile Lab
- Small Cell deployment in enterprises (2012) Atoll, ibwave, XCal, Xcap,, Actix
- LTE Network planning and design (Atoll, CIQ, RFDS), optimization and performance for Ericsson (AT&T) (2010-2011)
- Outdoor Pico cell (Metro Cell/Het-Net) research and trial. (2009)
- WiFi network in high speed trains (AMTRAC-2008), WiFi Off loading and outdoor mesh network

## Publications

- *Heterogeneous Network (Het Net) and Small Cell Deployment opportunities and challenges with DAS integration and WiFi offloading for wireless service providers, Mantra Telecom Inc June 20, 2012*
- *WiFi offloading in dense urban Hotzones, quantitative and qualitative analysis, T-Mobile USA*
- *Evolution of wireless standards IEEE and 3GPP, www.telecom-cloud.net December 14, 2011,* http://sdrv.ms/SHJEoQ
- *TV White Space network architecture, T-Mobile USA June 9, 2009, Participated in IEEE802.22 standard*
- *DAS design and implementation guidelines, T-Mobile USA April 10, 2009*
- *WiFi Mesh Network, a potential back haul for 2G and 3G Cellular network,*
- *Performance characterization of multi-radio, multi hop WiFi mesh network, T-Mobile USA*
- *Design and implementation of WiFi wireless broadband networks inside high speed trains.*

**Patents:**
**USPTO: 10477349. USPTO: 10,708,845 B2, USPTO: 10812852,** USPTO: **10721699, USPTO: 2020/0145784 A1, USPTO: 2019/0253836 A1,** USPTO: 11234038 B2, USPTO:10708845 B2, 2020/ 0112931, several other patents pending in USA, UK, Singapore, India, International**.**

**Miscellaneous:**

- ⇨ *SW Dev life cycle management, JiRA, Confluence, Atlassian, Google suite*
- ⇨ *Customer Advocate and customer success partner.*
- ⇨ *Project and budget planning and execution.*
- ⇨ *RFI/RFQ/RFP response, support business teams during entire life cycle of the assignment.*

## Education and trainings

- ⇨ MS, Telecom Networks (3.7) University of Denver,Grad Certificate, (24 credits) Network Architecture University of Denver, BS Electrical Engineering
- ⇨ Project management, Agile SCRUM, Python automation

## Certifications and Organizations

- ⇨ Owner of Linked in Group: Het Net (Heterogeneous Networks- 3GPP/3GPP2 and IEEE networks) <http://www.linkedin.com/groups/Het-Net-Heterogeneous-Networks-3GPP-4463185>
- ⇨ www.IEEE.org
- ⇨ Project management
- ⇨ The FCC Call sign: **KI4DDY** (HAM/Amateur radio license)
- ⇨ Data science fundamentals (JHU/Coursera)
- ⇨ VMware Telco cloud fundamentals, Oracle cloud platform