

DELIVERING 4G (LTE) TO 5G MIGRATION WITH SUPPLY CHAIN MANAGEMENT

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ABSTRACT

The vulnerability of 5G telecom deployment cost with increased spectral efficiency, and new heterogeneous dense network deployments offers a big challenge in technology migration from 4G (LTE). Supply chains exist in both Mobile Service Providers (MSP) and Mobile Equipment Providers (MEP), although the complexity of the chain may vary greatly from MSP to MSP and MEP to MEP. In 5G purview, realistic supply chains have multiple end products with shared components, facilities and capacities. In this paper, we explore the effect of migrating legacy 4G MSP deployments into 5G to conform the e-governance needs. SDR applications algorithms from large form factor devices to the smaller one such as handheld mobile devices known as Elasticity Conscious Mobile Service Provider Systems (EConMSP). Our EConMSP framework concentrate on existing MSP infrastructure Volatility, including inherent migration complexity and the implementation. We expose our result for Migration Indicator (MI) in-terms of Device Dependent (DD) or Device Independent (DI) Transformation Steering Factors (TSF), such as Device Reconfiguration factor, Device Interoperability and their relation to inter-MSP or intra-MSPs Volatility. The impact of migration TSF is discussed for diverse mobile multimedia services obtained from standard vendors, OECD, Qualcomm, to name a few; at the online website. Migration parameters are optimized against the native MSP services, while switching between different transformation schemes. Our results show that to conform with the 5G e-governance, the MSP infrastructure Volatility can be minimized by using an MSP-centric cost elasticity that enables both the effective use of underlying hardware architectures and the User Equipment (UE) access completely transparent to them. The robustness of our Elasticity Conscious Mobile Service Provider System (EConMSP) framework indicates 5G resource allocation problem in SCM must be decentralized when considering a practical application migration.

KEYWORDS: Supply Chain, Vulnerability, 5G, e-Governance, LTE, Technology Migration, SDR, Cost Elasticity