MODERNIZATION OF A TELECOMMUNICATIONS SYSTEM

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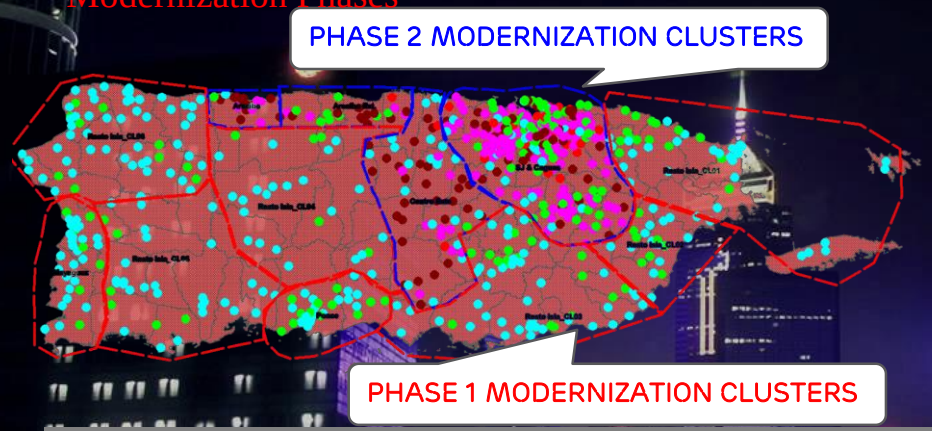
Abstract — The purpose of the project was to provide a more robust telecom system with new technologies that provide faster upload/download speeds to users. It was found that by doubling the 3G digital units and adding a new D.U. for LTE 4G the network was sufficiently lighter to provide a better data service to customers in the metro and rural areas of Puerto Rico.

Problem Statement — TelecomPR addresses its wish to improve its telecommunications network by utilizing Ericsson's new 6k series radio base station which unites all technologies under one same roof providing space convenience and easy integration.
TPR seeks to obtain new subscribers and fulfill their increase of data usage per subscriber. Consequently, wanting to handle more traffic in their networks new technologies and expansions are to be put in place from gsm, umts and lte.

Action Plan – Modernization

Modernization Phases



MODERNIZATION PHASES:

PHASE 1: 17 TOTAL ROLLOUT SUB CLUSTERS

(MAYAGUEZ, PONCE, REST OF ISLAND SUB –CLUSTERS)

ASSIGNED FOR CLUSTERS WITH LARGE NUMBER OF SITES WITH UMTS 3RD CARRIER EXPANSION REQUIREMENT

MOST OF SITES IN THIS PHASE ARE CURRENTLY RBS3000/2000

PHASE 2: 19 TOTAL ROLLOUT SUB CLUSTERS

(SAN JUAN & CAGUAS, EAST CENTRAL, ARECIBO & ARECIBO EXT.)

ASSIGNED FOR CLUSTERS THAT ALREADY HAVE UMTS 3RD CARRIER EXPANSION IN MAJORITY OF CLUSTER

MAIN PRIORITY IS INCREASING POWER & HIGH ORDER SECTORIZATION

MOST OF SITES IN THIS PHASE ARE CURRENTLY RBS6000

IMPROVEMENTS

Ericsson & TelecomPR's subscribers' expectations continuously grow and retaining their business means updating outdated networks. With a newer network infrastructure, they will generate more revenue per square foot than in older technology. Power bills will be reduced by uniting multiple cabinets, amplitude in bandwidth will help augmentation of users per cells and wasted space will become available in its pad. With the constant support of Ericsson's expert project teams TPR will build competitive strength, flexibility and longevity into their network to best compete against other providers.

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RBS 3106 UMTS + RBS 2106 GSM = RBS 6102 UMTS/GSM/LTE
(3.03'x4.26'x5.3') (3.03'x4.26'x5.3') (2.35'x4.3'x5.7')

Modernization Sites Plan		
	Add 3rd Carrier UMTS	276
	Increase Power + RRUS	137
	High Order Sectorization	28 (0)
	RRUS Modernization + High Order Sectorization	91
	Modernization Only	162
	Total Sites	**666**

Conclusion - After attacking the sites as planned the results were obtained as expected. The legacy equipment, 2k & 3k series RBS's, were taken off-line and removed from the site resulting in a cleaner client pad thus gaining savings in ft square per collocation site, referring to the tower provider & the rented space on the ground. As projected the gsm & umts services were doubled from their previous setup, gsm & umts. LTE came anew with rru's for the 2100/700MHz band thus exploding the 4G lte market and previous speeds used in web browsing.
The major concern TPR had was increasing their performance without new alarms and this was achieved successfully, the lte equipment was incorporated beautifully and had major acceptance in new throughput peaks obtained in the weekly kpi's the RF team recollects.
The new rbs 6k still has space for future expansion upon new bandwidths becoming available and/or new technologies arising.