
Spectrum Management
global
Implementing an Automated
Spectrum Monitoring Metropolitan Area Network
information technology

Automated Spectrum Monitoring MAN?

An Automated Spectrum Monitoring Metropolitan Area Network (MAN) is a high data rate, computer network which has been optimized for operation over an entire city. In the Bahamas it is called the National Spectrum Monitoring System (NSMS).

NSMS is a widely implemented surveillance and spectrum analysis network used by URCA to aid in the task of spectrum management.

The NSMS is comprised of two state-of-the-art spectrum management tools that include an Integrated Spectrum Observation Centre (ISOC) and a Technical Measurement and Reporting System.

Why build it?

- It is envisioned that the mobile electronic communications market will be fully liberalized in The Bahamas by the end of 2014.
- According to global trends, liberation will change market dynamics and result in increased demand for radio frequency spectrum.
- The quantity of perspective wireless service providers already in queue suggests that significant spectrum management challenges lie ahead of URCA.
- We believe that investment in spectrum management can ensure that spectrum is used by private and public sector in ways which meet the countries economic growth needs and could ensure that radio spectrum is used in ways which allow the maximum utilization of the nation’s spectrum resources.
- **Implementing an automated spectrum monitoring MAN, better positions URCA to provide efficient and effective spectrum management and to navigate the perceived challenges ahead.**

An Overview of the Process

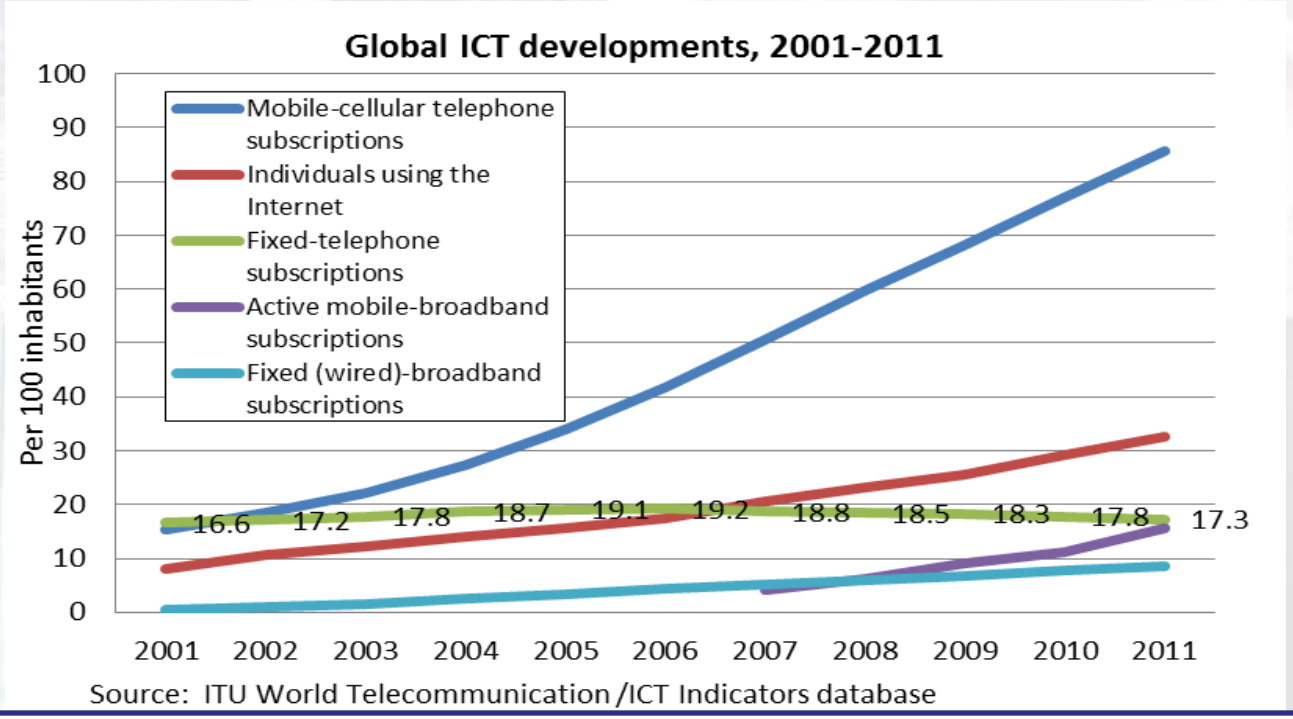
Current Situation

Today, Information and Communications Technologies (ICTs) are a bridge to economic and social development.

In the current generation, wireless ICT services are placed alongside water, transportation, and electricity, as a basic need and service.

All Wireless ICT service providers would agree that interference-free radio frequency spectrum is an essential production input.

The Market Perspective: The Global Trends



- The subscriptions for fixed services are decreasing, while the subscriptions for mobile services are increasing.

- The increase in demand for mobile services is directly proportional to an increase in demand for radio frequency spectrum

The Economic Perspective

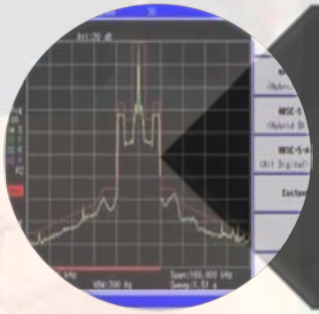
•Consumers are demanding more services but at a less price

•New both new and existing businesses will require the use radio frequency spectrum

Social & Political Perspective

In the twentieth century, wireless communication services have facilitated the bridging of the global digital divide.

This global digital divide refers to a sizeable gap between those with extensive access to digital technology and those with extremely limited or no access



Over the past decade, access to the radio frequency spectrum has been one of the primary enablers of the ICT service provision, and the resulting social and economic growth.

The Monitoring Challenges

Geographical Challenge
URCA's has issued radio spectrum licenses to service providers across an archipelago of over 700 island and cays, which extending over 13880 sq. kilometer from Bimini in the north to Inagua in the south. Transporting resources outside the capitol create significant logistical and maintenance expenses.

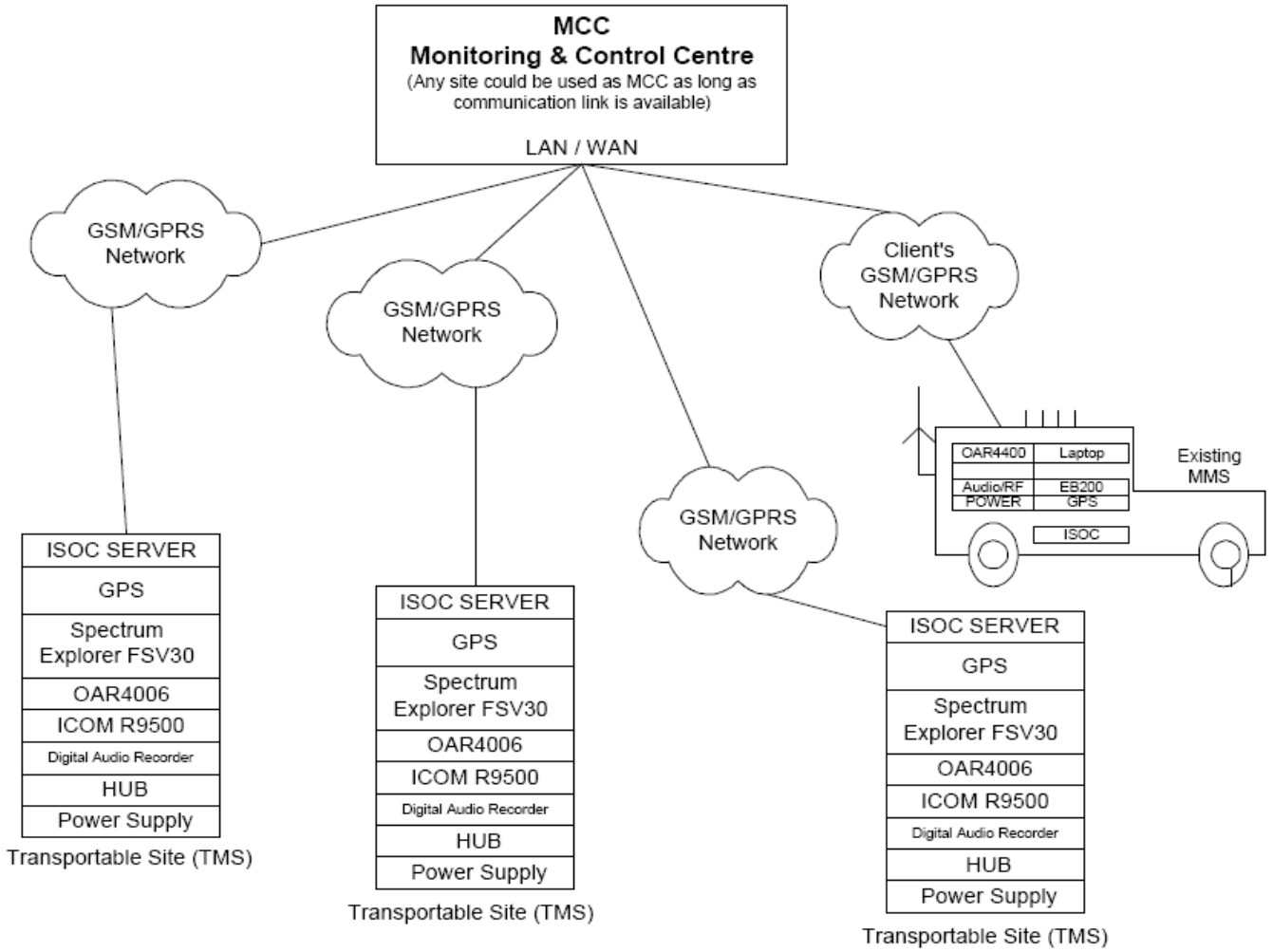
Financial Challenge
The cost of providing technical resources to survey and analyze the spectrum can easily outweighs short-run benefits but a proposed technical situations should not result in negative economic profit.

Quality Control Challenge
Private sector growth and return on investment is dependant on frequency assignments that are free from harmful interference and protected by effective compliance enforcement. Wherever licensees operate, URCA must ensure that the spectrum is interference-free condition.

Efficiency Challenge
Since spectrum is limited, URCA must also maximize utilization of the spectrum, avoid interference and minimize gaps ('guard bands') and spacing between adjacent users.

Design & Engineering Solution

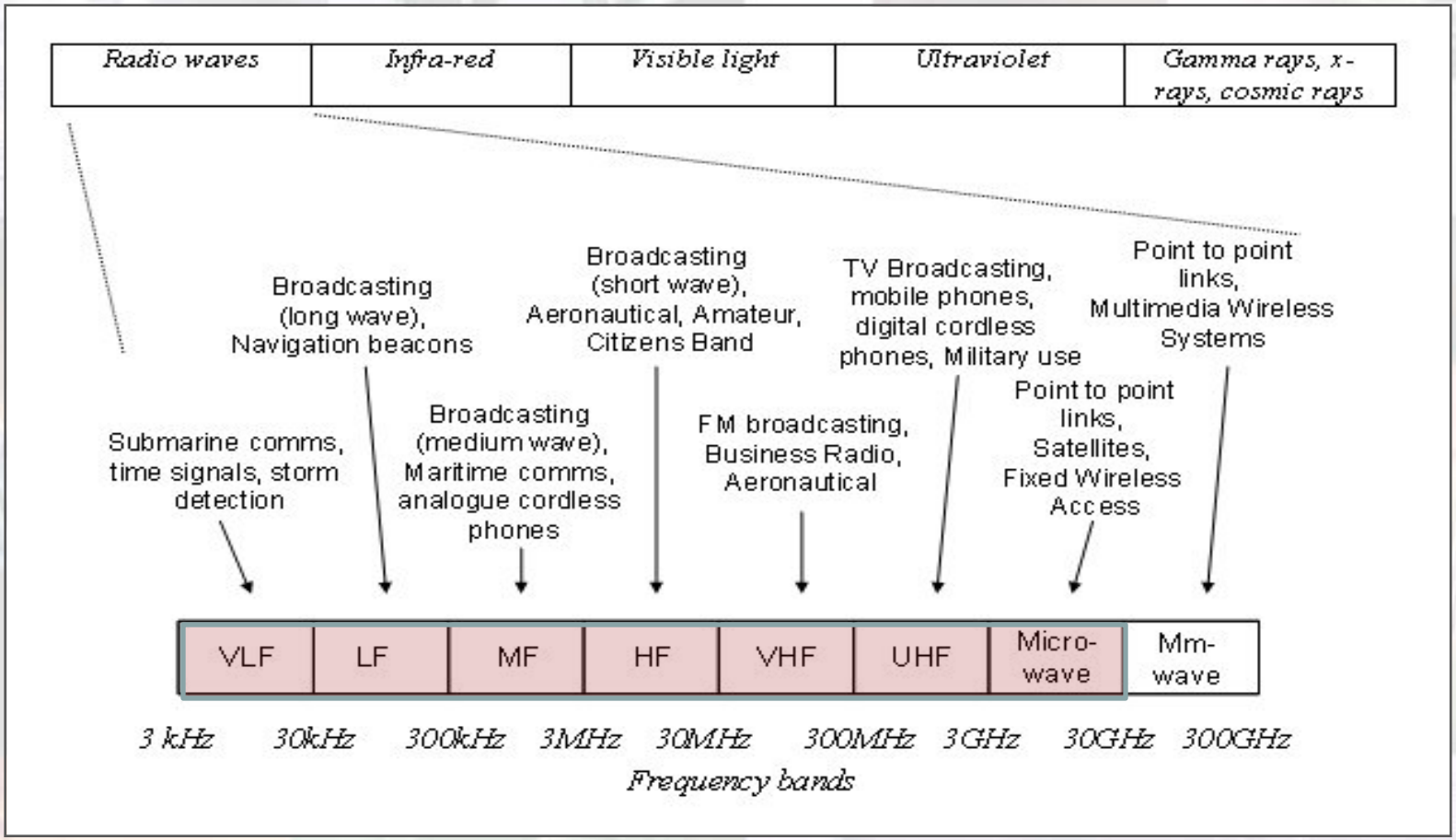
Automated Spectrum Monitoring Metropolitan Area Network



Operation

- Technical Measurements
- Digital Audio recording
- Spectrum analysis
- Statistical analysis of logged data
- Dynamic tables of measurements
- Channel occupancy determination
- Verification of the presence of licensed users
- Determination of unlicensed use
- Information for the planning of new frequency bands
- Geolocation of transmitters using direction finders and triangulation over digital maps

System Range



The Benefits Exceed Cost

Maximized Return on Assets

- The MAN is URCA largest fixed asset and represents URCA's commitment to providing quality service to stakeholders. Use of the system has increased the contribution margin and
- profitability ratios

Maximize Monitoring Coverage

- The MAN is both scalable and transportable. The sites can be deploy anywhere in The Bahamas and provide fully functional 24/7/365 coverage.

Increase Organizational Efficiency

- The MAN has allowed for the re-deployment of technical resources to other regulatory projects resulting in greater production levels and increased organizational efficiency.

Conclusion

URCA is pleased to inform this body that the spectrum monitoring metropolitan area network described here has been in operation in The Bahamas since December 2010

We believe the Spectrum Monitoring MAN is a tool that will help to ensure efficient and effective spectrum management in a fully liberalized mobile communications market.

THANK YOU

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