

SMALL SATELLITE MISSIONS SYMPOSIUM (B4)
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CUBE – SAT. FOR INTERNET & RFID – TRACKING OF VEHICLES

Abstract

Small Satellite Programmes are defined and determined at the Service of Developing Countries. Implementing that could be satisfied and results achieved by developing nations through using Small Satellites. The efforts, being made by North African States and ATUCOM organisation, are encouraged to realize North African Small Satellite called “Cube-Sat.” The utilization of Cube-Sat. system and their benefits to Humanity and Progress in general, in advanced mobile and personal satellite communications systems, will be addressed (including those providing services to hand held terminals: cars, trucks,..). Among, space is increasingly important with the rapid exchange of satellite data. For thus, it's important area to achieve an Internet Protocol over Satellite Services under North Africa States.

The objective of this contribution is to highlight and discuss the state of the tracking by mobile satellites with RFID terrestrial components and the Internet Protocol over satellite. In this project, the two Small Satellite missions are achieved by the same systems. Advanced Cube-Sat. communications concepts and systems have been composed and presented as:

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- Cube-Sat. at low terrestrial Orbit (satellite Down-Link and switching).
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- Satellite Gateway.
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- PSTN / PDN.
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- Core Network.
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- Base Station Controller.
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- L-Band Cell Site (Terrestrial L-Band and Satellite Gateway integrated in to same core switching architecture).
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- Same Mass-Market Air Interface standard – Satellite and Terrestrial Components use the same Protocol: CDMA / TCP-IP / RTCP – RTP / SIP / H323...
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Standard Subscriber Equipment / Chipset design / Gateway / Gatekeeper: Common L-band RF chip shared for satellite and terrestrial Wireless Internet.

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Powerful space segment-significant link margin enables communication with standard wireless handset key components.

Radio frequency identification systems (RFID) encompass a broad area of applications. Automobiles come readily with a unique identification number. Using a microprocessor, that will take these inputs and digitally orchestrate to create a transponder which communicates with the Cube-Sat. to disclose the vehicle location. The transponder and the Cube-Sat. Communication system are designed such that the transponder, upon receiving an inquiring signal, responds with a transmission.

Network uses an Internet Protocol over Cube-Sat.. Since the Cube-Sat. resource is used only in proportion to the active circuits and their holding times, this is ideally suited for IP traffic, Voice over IP traffic and data traffic. A demand assigned multiple access system is typically a single hop satellite transmission network, which allows direct connection between any two nodes in the network. This approach improved satellite network connectivity and resource utilization efficiency. By using a demand assigned multiple access system, a single transponder can support several subscribers. Many subscribers can be served using only a fraction of the satellite resources. With this system, we provide the customer total control and their satellite-based network.

Conclusion: A better knowledge of potential applications of space technology can offer many solutions for solving various problems, especially the service of developing African countries.

Several themes will be discussed, like:

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Application of Cube-Sat. communication in Remote education.

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Applications of Common interests (pollution of the sea, desertification, water conservancy,..)using Cube-Sat.