COLLEGE OF ENGINEERING & TECHNOLOGY

Department: Electronics and Communications Engineering, Cairo

Graduation Project Description Form

Project Title: VAST Design, Simulation and Implementation of the Baseband   Module of the User Terminal

Duration from mo/year_____till mo/year   _____
Project Supervisor(s): Prof. Dr. Mohamed Aly Aboul-Dahab

Product Category
Algorithm____   Hardware____   Software_____
Standards:
Safety: UL, CE_____   IEEE _____FCC _____Other _____
Practical Realization Form
PCB _____ Firmware___   Embedded CPU Kit (ARM, ..etc):_____
PC Software _____ Ready-made Package_____ DSP Kit___ FPGA Kit__
VLSI Schematics ____ VLSI Layout _____   VLSI Silicon (ASIC)_____
Language
VHDL/Verilog_____   Matlab _____   C/C++/Java _____
Productization
Finished Product Form:____   Possible Commercialization _____
Amount of funds needed for buying components: _____
IEEE GOLD Made-In-Egypt/Engineering Day: ___
ITAC (ITIDA) or NTRA Funding Application:_____
Testing
Functional___   Simulation___   Parameters___   Final Hardware_____Other:
Lab Test Setup
EMC _____   Environmental Microwave _____ Analog Lab_   Other:
CAD Tools *(No unauthentic software is allowed):*
Elective Classes Required:
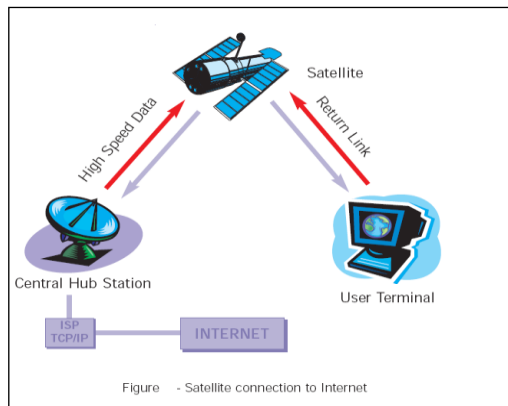
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Abstract

VSAT stands for Very Small Aperture Terminals. It allows for the provision of Broadband services using Satellite technology. A Very Small Aperture Terminal (VSAT), is a two-way satellite ground station with a dish antenna that is smaller than 3 meters . Modern VSAT technology now allows small businesses and residential users to avail of the opportunity to receive Broadband services via satellite. A VSAT network consists of three components:

■ A satellite

■ A central hub

■ A virtually unlimited number of VSAT user terminals.

Figure   - Satellite connection to Internet

The project will cover the following topics:

- Fundamentals of satellite communications.
- VAST network components
- Network topologies.
- VSAT terminal equipment block diagram and technical specifications

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- Design, simulation and implementation of some of the building blocks of the terminal equipment

The practical part of the project will depend upon the use of:

- Software packages that can provide simulation of circuit designs.

- FPGA chip that can be downloaded with the successful simulated designs.

Each student in the group will be responsible for:

- Investigating the technicalities of VSAT
- Designing, simulating and implementing one of the building blocks of the baseband module of the user terminal
- writing down his/her own project thesis.

Prerequisites

Each student has to study a VHDL course

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References and Links