



Asset Tracking System

System Definition:

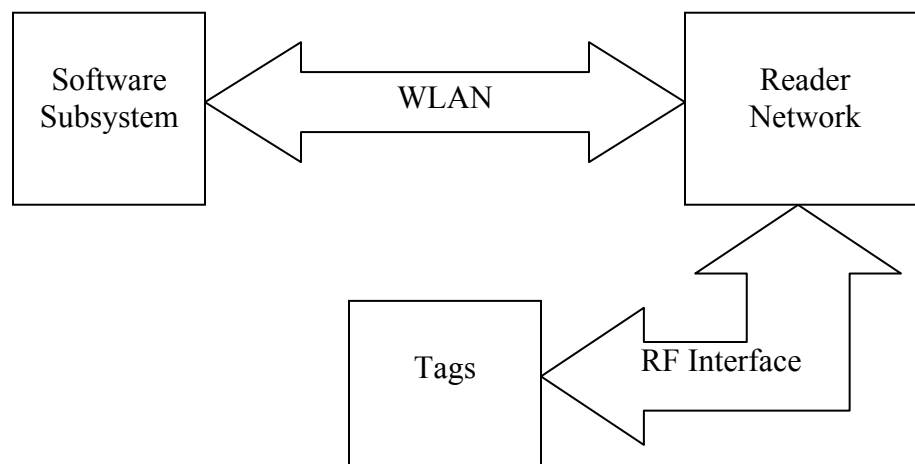
The primary goal of the system is to provide visibility for high value assets within a bounded facility. In order to provide such a solution, a three tier approach is used. The main components in this approach will be,

1. Tags
2. Readers
3. Software subsystem

The tags are the entities that will be physically attached to the assets. Approximately 500 of these tags will be used, each having GPS capability to acquire location anywhere within the facility along with an RF transmitting section to report that information to the reader units.

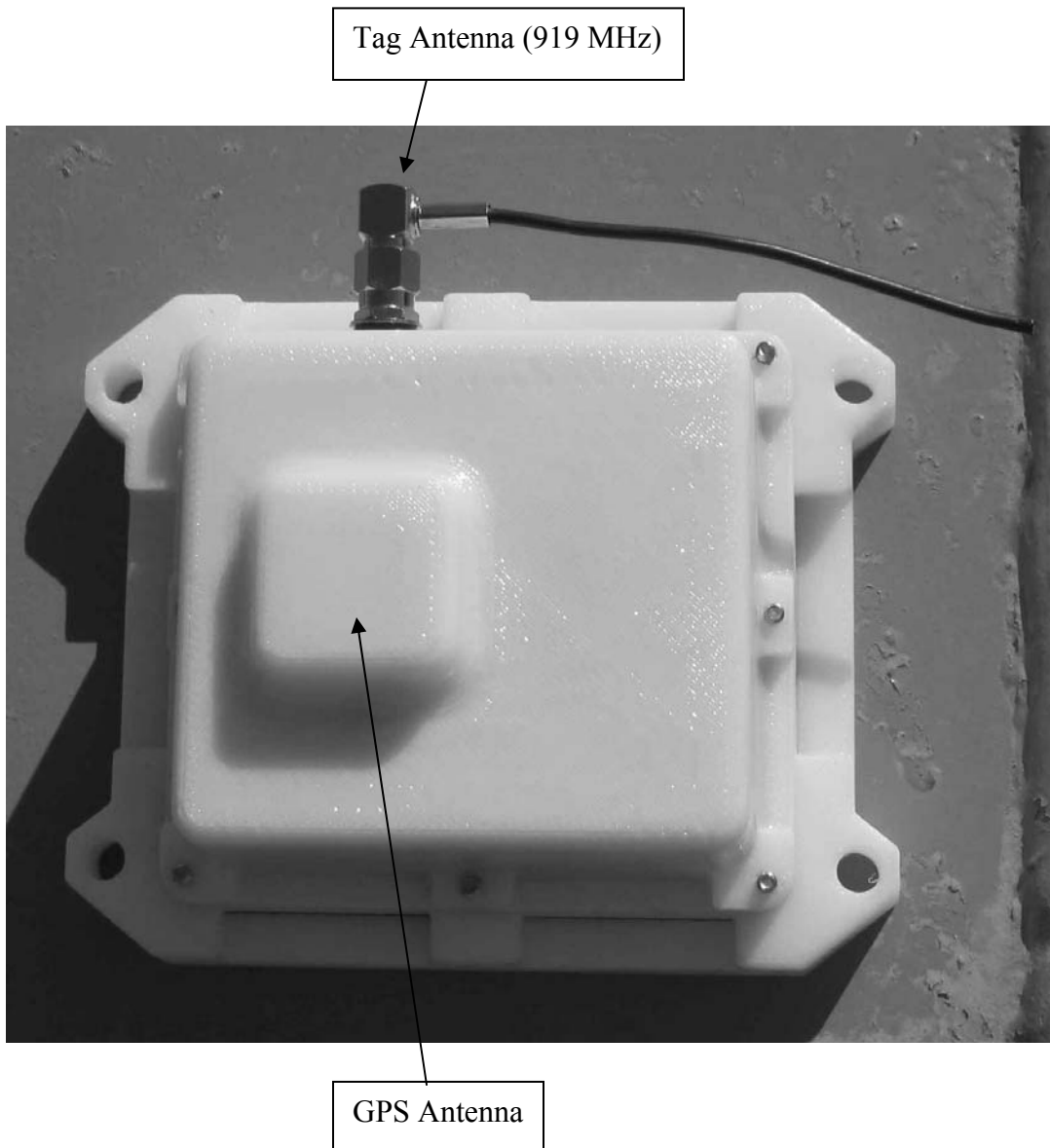
The readers are the entities that will be distributed around the facility. Approximately 12 reader units will be mounted on poles or existing structures and each will have an RF transmit/receive front end interface to talk to the tags. The readers will use the existing wireless (802.11 b/g) network for communication to the software subsystem which will be running on a local PC.

Refer to the following diagram for a graphical description of the system:



System Hardware:

Tags: The main components of the tag will be a microcontroller, a GPS module and an RF interface Chip. The tag units will be battery powered, operating at 919 MHz, generating approximately 0.1 Watt at full transmission power. The tags will respond back to the reader on demand (meaning the tag will be queried by the reader whenever required, on a completely random basis). The tag is capable of responding to a query at any point in time. Once the tag is queried it will acquire GPS coordinates and transmit that information to the reader unit. Transmit radius is approximately 300 feet.



Readers: The reader unit will include an RF interface chip, a wireless (802.11 b/g) module and a microcontroller unit. The readers are powered with a standard 110 V outlet. The reader operates at 919 MHz at a maximum transmission power of 0.1 Watt for communication with the tags, and between 2.412 and 2.484 GHz (802.11 b/g wireless protocol) for communication with the existing wireless network for data backhaul. The reader units connect to the software subsystem using the wireless module and are capable of generating a query based on user demand from the software. The reader unit will broadcast the query in a radius of roughly 300 feet. The tag will be activated in order to send geospatial coordinates back to the reader unit.

