

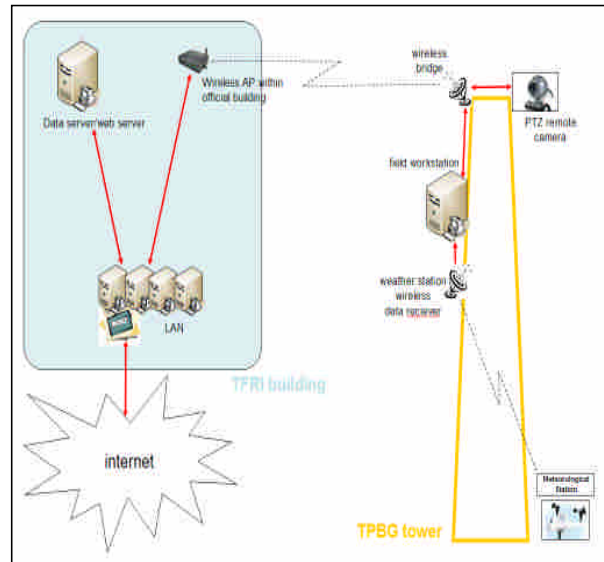
# Application of Wireless Sensor Network for Real-time Monitoring and Sensing of Biological and Environmental Data in Taipei Botanical Garden

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Wireless sensor network in Taipei Botanical Garden (TPBG) follows 802.11 network protocol. Equipping with sensing instruments, sensors, and functionally related electrical components, environmental data are logged and able to be acquired remotely and immediately. With the privilege of the popularity of Internet, information from Taipei Botanical Garden can be investigated anytime and anywhere.



Tower located in TPBG is ca. 263 meters away from the main building of Taiwan Forestry Research Institute (TFRI). Wireless networking is a practical way for connection toward Internet without the layout of the cables crossing the tree canopy.



▲ Architecture of wireless sensor network in Taipei Botanical Garden

◀ Meteorological instruments installed at the bottom of the tower

Infrastructure of wireless sensor network is extending. Using the network access point on the tower as the relay of wireless network signal, more sensing instruments can be installed to monitor all kinds of biological and environmental information.

To extend the distance of signal transmission and to strengthen the wireless signal stability, a directional panel antenna is set up at the top of the tower.

Meteorological instruments are installed at the tower. Parameters including air temperature, related humidity, atmospheric pressure, wind speed, and wind direction are measured.



A wireless network camera is also set up on the tower. Web-based operation interface offers images browsing and camera controlling via WWW browser. Scheduling photos can be used for the image records of the animals or plants.

Meteorological data are deposited into server-side database continuously and automatically. With the incorporation of the "Eco-logical Metadata Language" (EML) metadata description architecture, stored data can be retrieved, interpreted, rearranged, then used by other statistical computer softwares for further analyses and research. (EML see: <http://knb.ecoinformatics.org/software/eml/>)

