

December 13, 2005

Press Release

YRP Ubiquitous Networking Laboratory

[Press Release]

**The Successful Development of the “Sensing Dice”,
an Active Electronic Tag with Built-in Multiple Sensors,
and an Ultra Micro Base Station and a Mobile Base Station**

(1) An Active Electronic Tag with Built-in Multiple Sensors “Sensing Dice”
Successfully Developed

YRP Ubiquitous Networking Laboratory (Shinagawa, Tokyo, Director: Ken Sakamura) has successfully developed a sensor add-on board for the micro active electronic tag “Dice”, which uses very low-power 315 MHz radio waves, and an active electronic tag/wireless sensor network node “Sensing Dice”, which is a combination of multiple sensors and “Dice”. The “Sensing Dice” has temperature, velocity, light, infrared ray and human sensors as well as a power supply circuit and batteries. We can use “Sensing Dice” to build sensor networks and perform real-time monitoring of various environmental information used for context awareness in ubiquitous computing environments.

Furthermore, for instance, when “Sensing Dice” are applied in supply chain management system, they can be attached to returnable boxes and containers as active electronic tags to record the temperature, moisture, shock, lightning etc., and such information can be used to understand the status of goods in boxes and containers during transportation.

As an application of “Dice”, the Laboratory will also develop a “Responding Dice” module, which has a function of responding to searches from a base station by turning on a LED.

[Information 5]

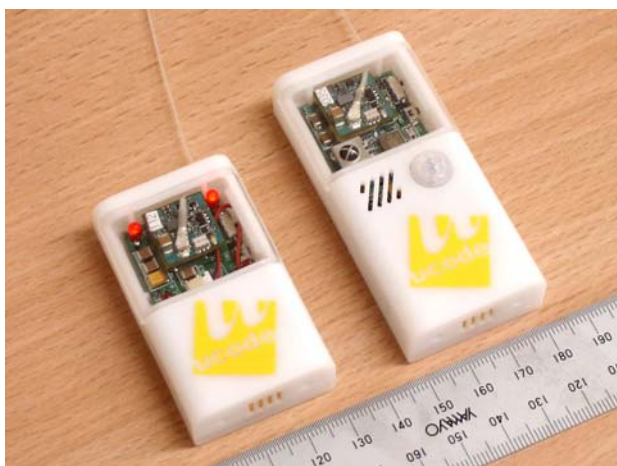


Diagram 1 “Responding Dice” (left) and “Sensing Dice” (right)

(2) “The World’s Smallest Base Station Released!”

Dice Base Station that Uses nT-Engine

YRP Ubiquitous Networking Laboratory has successfully developed a micro Dice base station by putting an active electronic tag/wireless sensor network node receiver functions to a real-time sensor network node, nT-Engine. It is of the size of a matchbox of 60mm (W) x 46mm (D) x 27mm (H) (excluding projections and antennas) and it can be directly connected to the nT-Engine’s network that uses UNP (Ubiquitous Network Protocol.).

In addition, the Laboratory has developed a Dice base station with a gateway function that performs conversion from a UNP network to an Ethernet/IP network. It is of the size of a palm at 62mm (W) x 67mm (D) x 39mm (H). Its gateway function makes it possible to directly connect a Dice base station to a TCP/IP network. Since this Dice base station with nT-Engine supports secure communication realized by eTRON, sensing data can be communicated securely over a TCP/IP network as well as a UNP network.

[Information 5]



Diagram 2 From left, Dice base station (UNP network), Dice base station (TCP/IP network), UNP-TCP/IP gateway. Center front, “Dice” active electronic tag

(3) Mobile Dice Base Station that Uses a UC

YRP Ubiquitous Networking Laboratory has successfully developed a mobile base station to receive data transmitted from active electronic tags/wireless sensor network nodes, “Dice” anywhere. This base station is a Ubiquitous Communicator with a built-in active electronic tag Dice base station that uses very low-power 315 MHz radio wave and can control multiplex communication of over 1000 Dices within a visible distance of 10 meters. It is expected that this mobile base station will be used in many different application fields. Some examples are using Dice as a ucode radio wave marker that can display information related to locations when users pass by the marker holding a UC with a built-in Dice base station, and using “Sensing Dices” for collecting environmental information. Users will still be able to use the functions of the UC as before and also wireless communication functions, such as 13.56 MHz and 2.45GHz passive tags, wireless LAN (IEEE 802.11b) and Bluetooth.

[Information 5]



Diagram 3 Mobile Dice Base Station

In the rear, a Dice radio wave marker with a built-in solar battery

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[Inquires regarding this issue]

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