

## TECHNICAL COMPETENCIES

- ⊖ Optimized solutions for custom platforms and hardware
- ⊖ Porting to custom platforms and hardware
- ⊖ System, Embedded and Kernel level development
- ⊖ Driver Development

### Standards & Protocols

#### Wireless:

- ⊖ IEEE 802.11 (11a, 11b, 11g, 11e & 11i)
- ⊖ Bluetooth®
- ⊖ WAP

#### Networking:

- ⊖ IEEE 1394, IEEE 1394.1

#### Real-time streaming:

- ⊖ IEE 61883
- ⊖ RTP/RTCP/SDP

### Platforms

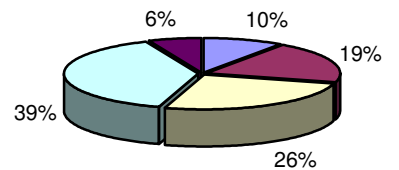
- ⊖ Linux
- ⊖ Embedded Linux
- ⊖ Windows
- ⊖ VxWorks

### Hardware

- ⊖ Hitachi H8S2623
- ⊖ Hitachi SH4
- ⊖ Intel IXP
- ⊖ Toshiba TX 39x
- ⊖ Motorola 56004

## SKILL DISTRIBUTION

Over 50 Engineers experienced in wireless technologies



- > 10 Years
- 6-10 Years
- 4-6 Years
- 2-4 Years
- < 2 Years



## SAMPLE PROJECT SNAPSHOTS

### Wireless Home Gateway

Developed a Wireless Home Gateway solution that allows an authorized wireless client to login to the network, access machines in the local network (both wired and wireless) and access the Internet from behind a firewall. On the administration side the system allows maintenance of user lists, ACLs and firewall configurations.

The components developed include the firewall implementation using stateful packet filtering, authentication authorization accounting(AAA) using RADIUS implemented on the hardware and a VPN built over IPsec suite of protocols.

### 802.11 Driver Development

Developed host drivers for IEEE 802.11a, 11b and 11g on PRISM and Atheros chipsets using a customized version of Linux for residential gateways.

### QoS implementation

Implemented QoS specification (IEEE 802.11e) over IEEE 802.11b driver. The implementation follows a method of polling in which the AP controls all traffic in the medium. QoS layers are implemented above the 802.11b drivers and the 802.11b drivers are modified in STA and AP. QoS effectiveness demonstrated through transmitting real-time MPEG data over RTP/RTCP and by reserving bandwidth under different traffic conditions.

### IEEE 1394 Wireless Bridge

Implemented the wireless bridging concepts specified in IEEE 1394.1 for connecting independent 1394 networks.

Asynchronous and Isochronous data transmission over wireless is demonstrated.

### Wireless Security Protocol Implementation

Implemented the security specification through modification of the IEEE 802.11 MAC core. The work involved modification of the existing IEEE 802.11 MAC core and adding 802.11i functionality by modification of the driver/firmware.

Implemented TKIP features mentioned in 802.11i draft specification and authentication schemes mentioned in the 802.11x specification are achieved.

### Bluetooth stack Implementation

Developed a Bluetooth protocol stack including L2Cap and SDP and integrated it with a CAN network using a Bluetooth-CAN gateway. The implementation was tuned for embedded platforms.

An additional Bluetooth – MOST (Media Oriented System Transport) Gateway module provides an interface between the Entertainment and Navigation system in the vehicle with the outside world through wireless. The gateway uses an Ericsson Bluetooth Base band module and is based on Hitachi H8S2623 Controller. The Gateway Firmware interfaces to the HCI layer through an USB transport layer

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*For more information on NeST's service offerings in the Wireless domain, please contact:*

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