

Research & Development

In an IT sector characterized by constant change and intensifying competition, success depends on continually developing new and truly differentiated technologies. At Fujitsu Laboratories, we are pursuing the advanced technologies that are critical to the future development of our networked society. Spanning services, computing and communications systems, as well as the electronic devices, materials, packaging and cooling technologies upon which they depend, Fujitsu's R&D activities are carried out on a global basis by leading researchers in these fields.

Key Research Accomplishments in Fiscal 2002

Software & Services

Personal identification and authentication are critical to making e-government and e-commerce secure. We continued to advance research on biometric identification—including systems based on fingerprints, voiceprints, facial features, and palm vein characteristics—and developed a smart card-based personal authentication system that incorporates biometric technology.



Biometric mouse with palm vein pattern recognition device



Contactless palm vein pattern biometric authentication system

Platforms

As a world leader in grid computing research, focusing on enterprise environments, we advanced the practical application of this next-generation server technology, which enables multiple computers to work as one and gives users access to whatever computing resources they need without having to be aware of individual system performance or status. This technology is especially beneficial to any sector with intensive computational demands, such as finance or manufacturing, as it allows for more efficient use of internal resources.

Electronic Devices

Among our notable achievements in the field of electronic devices was the development of a high-output amplifier based on gallium nitride for use in 3G mobile communications base stations. Previous amplifiers needed to run on a lower voltage than the rest of the base station system, requiring a step-down transformer with its associated losses. But the gallium nitride amplifier can withstand higher operating voltages, reducing power losses and increasing base station efficiency.

Future Areas of Focus

We are at the brink of a new era in information technology, in which interconnected computers and networking devices are becoming an integral and pervasive part of our everyday surroundings: the era of ubiquitous computing. To help make this new era a reality, in software and services, we are working on ubiquitous system solutions, system security and knowledge management technologies. In platforms, we are focusing on business applications of grid computing and ways to merge optical, wireless, and IP-based networking. And in electronic devices, we are developing a single-chip VLIW multiprocessor, as well as next-generation CMOS technologies and advanced devices for wireless base stations. We are also continuing our work on some of the core underpinnings of these technologies, such as environmentally friendly materials, high-density/high-precision packaging technologies, cooling technologies, and reliability assessment technologies.