



Success Story

A Fortune 500 Japan-based Telecom Company

Smart Card based on FRAM technology

The integrated circuit chip embedded in smart card is empowered to perform different functions. Smart cards offer consumers the ability to hold multiple applications on a single card, separately and securely. A smart card carries more information than the magnetic stripe cards that are commonly used today.

The recent years have witnessed industries like telecommunications, transportation, PC/software, and government agencies worldwide aggressively incorporating smart card technology into their businesses.

The Challenge

The scope of this project was:

To understand, test and optimize the smart card OS (HiperSIM), a modular, high-performance, smart card OS for the Fujitsu HIFERRON (Fujitsu series of LSI chips used in multipurpose integrated circuit (IC) cards embedded with FRAM technology) family of 32-bit processors.

The Solution

A reverse engineering of the HiperSIM OS (proprietary OS based on Mach micro kernel, an OS kernel developed at Carnegie-Mellon University) is done to understand the OS functionality. This is followed by optimization of some of the core components of the OS like file system so that it can fit easily in a limited space in FRAM.

In the telecommunication set, the wireless Identity module (WIM) as per the standards is developed and tested out and finally integrated to the other parts of OS. This involves asymmetric key pair generation, MD5, SHA1 algorithms support.



Features

- The card is capable of performing encryption
- Each smart card has its own, unique serial number
- The smart card with HiperSIM OS provides a rich set of APIs at each level.
- The OS architecture is scalable and modular.
- With multiple application facility the card can support different types of applications. The user can thus do with fewer cards in his wallet.
- The card is also called a Java card as it supports JVM and Java Card Applets are running over this card
- The OS is optimized to provide large applications in the card itself

Benefits

- ◆ It stores applications and is capable of processing
- ◆ The card can communicate with computing devices through a smart card reader
- ◆ Information and applications on a card can be updated without having to issue new cards
- ◆ Chip is tamper-resistant
- ◆ Information stored on the card can be either protected with a PIN code or can be read/write protected

