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FEATURE

## Smarter Phones Require Smarter Solutions for Security

When businessman Hideki Suzuki lost his beloved mobile phone, a third-generation FOMA smart phone equipped for electronic wallet and other e-commerce applications, he was naturally concerned.

If someone were to use his phone maliciously to make purchases, transfer funds or view confidential data, or if the problem somehow impacted his business contacts, it could have been a disaster.

But Suzuki did not panic. He simply went to a pay phone booth, dialed his number and let the phone ring a preset number of times. Then

Suzuki smiled, because he had just locked his phone's buttons and smart card features — remotely, automatically and immediately.

DoCoMo's latest 3G FOMA phones with e-commerce capability offer advanced phone-lock features. Once a handset is locked, only the power button and emergency phone numbers can be used.

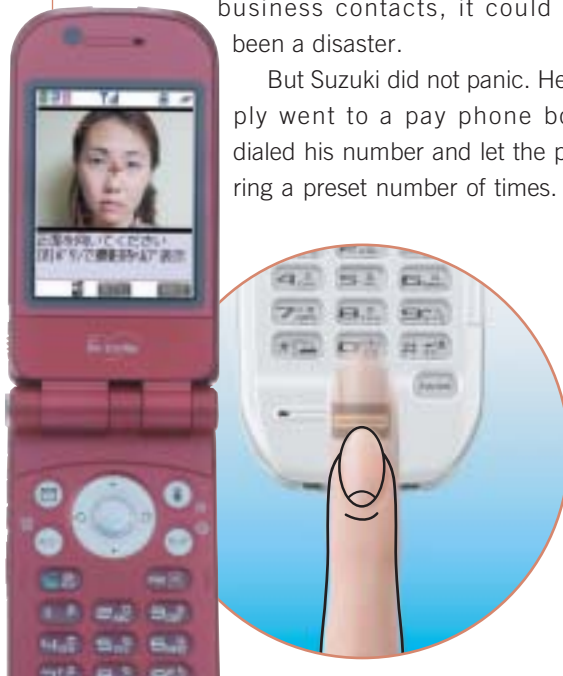
Moreover, Suzuki knew his DoCoMo handset was additionally protected with his personal biometric (face) data AND a password.

Suzuki emerged from the phone booth greatly relieved, and glad he had chosen a FOMA phone with advanced security features.

### Using the Human Body for ID

Biometric technology is becoming increasingly common in daily life in Japan. Fujitsu's vein-recognition technology, for example, is now used in bank ATM cards. As mobile phones and other devices gain increased functionality, security is vital for the prevention of malicious usage.

DoCoMo is in the vanguard of incorporating biometrics technology for mobile phone security. The P901iS handset with wallet functions, for example, uses face-recognition technology. The user takes a self-portrait with the handset's built-in camera and



New phones incorporate face/fingerprint-recognition technologies.

stores the photo in the handset. To unlock the phone, the user takes another photo for comparison with the stored photo, using biometric criteria such as facial outline and eyes/nose position. When a match is made, a password is still required for extra security.

All Fujitsu-made FOMA phones beginning from the 900 series, as well as the 2G mova F505i model, can be unlocked with a fingerprint sensor. Fingerprint recognition is a simple, convenient feature that replaces the need for secret password input.

### Antivirus Protection

DoCoMo has begun offering protection for its mobile phones on a level previously available only for PCs.

An antivirus engine embedded in DoCoMo phones constantly monitors content downloaded over the network from i-mode and other Internet sites, looking for signs of suspicious code or patterns that indicate a possible virus. When a

previously unknown virus is discovered, a new update for the virus database is promptly made available to users for free easy download to DoCoMo phones via wireless connection.

DoCoMo is also using its wireless network to distribute bug and security software updates. The new FOMA 902i series is standard-equipped to perform this function automatically and seamlessly, with nothing required of the user.

### Balancing Convenience and Security

In the world of electronic devices, increased security sometimes requires a tradeoff in the form of reduced ease of use. User verification and phone-locking procedures, for example, can add a level of inconvenience.

But DoCoMo's strong emphasis on customer satisfaction extends to the company's security measures as well. For DoCoMo, the aim is to offer enhanced security without burdening customers.

DoCoMo has found that many users are willing to accept certain minor inconveniences to ensure that their smart phones are more secure. But they are also continuing to request more and more mobile functionality, a demand that DoCoMo is meeting with phones packed not only with advanced features and applications, but also enhanced security.



The new FOMA 902i series offers automatic antivirus updates.

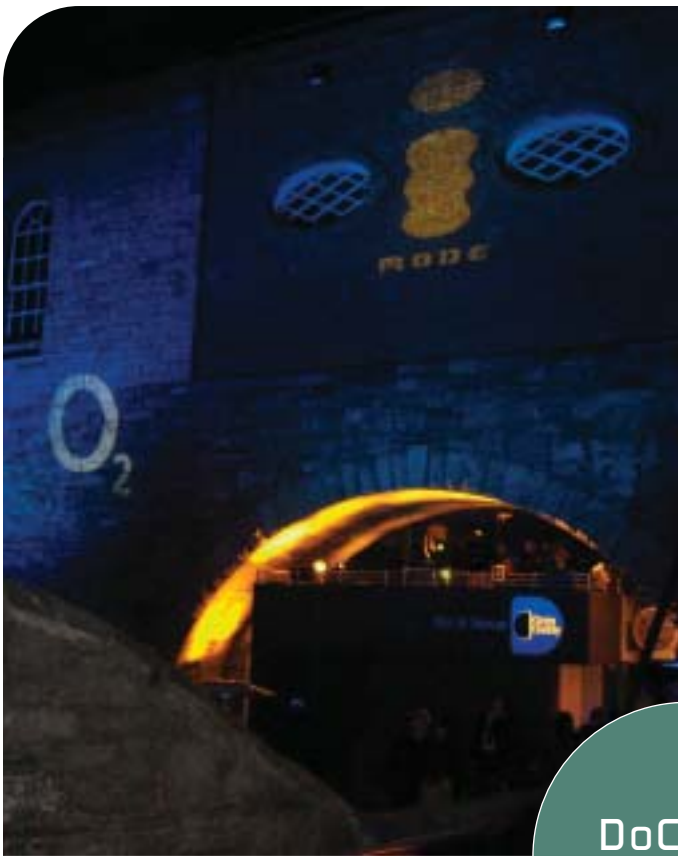
## Biometric Systems Spreading along with Security Consciousness in Japan

Biometrics, or the use of physical characteristics for personal identification, is finding increasing applications in corporate Japan, including mobile phones, bank ATMs, automobiles and more. Biometrics is not new, considering that fingerprinting has been used for many decades in the law enforcement field. However, interest in the adoption of advanced biometric technologies is rising fast in Japan. The Bank of Tokyo-Mitsubishi and Suruga Bank have introduced ATMs that read vein patterns in human palms for identification, based on a system developed by Fujitsu Laboratories. Vein patterns are especially useful for personal identification, as they are unique to each person and difficult to counterfeit since palm vein patterns are complex and stable, offering highly reliable security in combination with high verification accuracy.

At the ATM, the customer simply places their hand over a non-contact sensor and the palm vein pattern is compared against a pre-registered image of their vein pattern stored in their ATM card. The fact that the biometric data is stored on a chip in the user's ATM card, rather than in the bank's server, is another security advantage. Now other large financial institutions are looking closely at the introduction of similar systems. Next spring, Mizuho Bank, Sumitomo Mitsui Banking Corporation and Japan Post will introduce the world's first ATM cards equipped for finger-vein ID, using technology developed by a joint venture between Hitachi and Omron.

Advanced ATMs read vein patterns to confirm identity.





O2 Ireland lights up the venue of a press conference targeting consumer media.



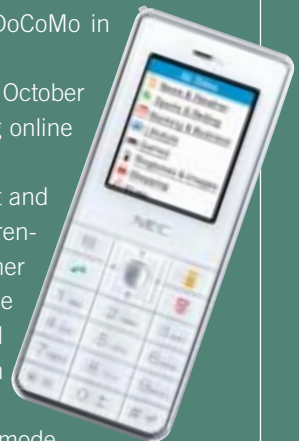
O2 plc is a leading provider of mobile communications services in three countries—the UK, Germany and Ireland.

Boasting a customer base of over 25 million, O2 launched i-mode services on 2G and 3G networks in the UK and Ireland in October. The company signed a strategic, long-term agreement with DoCoMo in November 2004.

Around 100 UK and 80 Irish sites were launched in October including the leading online bank Egg and the leading online property site Rightmove.co.uk.

Michiel van Eldik, Director of i-mode, Global Content and Applications, said: “i-mode gives us a very strong differentiator because it’s based on some very simple customer feedback. Namely, if they’re going to use mobile Internet services, it needs to be far easier, faster and populated with a far richer range of content from brands they already know and trust.

“Customers have played a key part in developing i-mode for our markets and have been involved every step of the way, from testing to how i-mode should be communicated. We chose our strapline ‘internet at the touch of a button’ to help explain to customers what they can do once they press the dedicated ‘i’ button on their mobile handset: they can search for a new home; shop; read the latest news; or pick up e-mails anywhere.”



O2 Ireland i-mode portal site

DoCoMo  
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TELECOMMUNICATIONS RESEARCH By InfoCom Research, Inc.

# Mobile Users Increasingly Focus on Internet

The convenience of the mobile Internet continues to grab the attention of cellphone users in Japan. Nearly 94% of Japanese mobiles are now Internet-capable, compared to 89% in South Korea, 33.5% in the US, 28.2% in Austria and 22.1% in Finland.

Since 1999, when NTT DoCoMo pioneered the mobile Internet for handsets with its i-mode service platform, the overall market in Japan has expanded to 77 million mobile surfers.

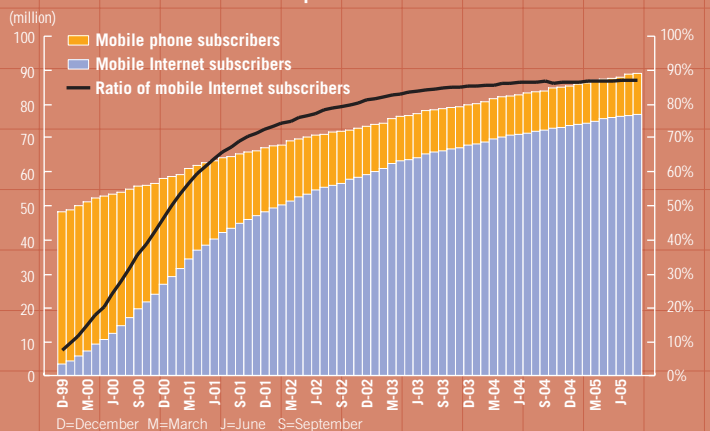
Mobile Internet services have caught on because they offer fast, easy access to the Internet anywhere and anytime. Everyday, for example, millions of train commuters pull out their small but sophisticated cellphones to catch up on e-mail, surf for information or amuse themselves with online games.

On an average day, DoCoMo 3G service users send about seven e-mails with their phones, and they view about 43 pages while surfing the Internet.

People are commonly using their cellphones for on-line shopping, booking reservations, banking and much more. Smart phones are being used for cashless payments at business establishments and even vending machines and many other commercial applications.

Mobile commerce via smart phones are expected to drive future

Mobile Internet Subscribers in Japan



growth. The market grew 145% to 201.3 billion yen (\$1.76 billion) in 2004 and is showing no signs of slowing down. DoCoMo launched wallet phone services in July 2004 and au, the second biggest mobile operator, followed suit this September.

Japanese mobile operators are seizing on another new business opportunity.

## Renault F1 Team Stars Alonso and Fisichella Visit DoCoMo

**October 4** ▶ Formula 1 World Champion Fernando Alonso and teammate Giancarlo Fisichella paid a courtesy visit to their Renault F1 team partner i-mode/DoCoMo in Tokyo on October 4. DoCoMo sponsored the Renault F1 team to establish i-mode as a global brand to increase the service worldwide.

The pair spoke with executives and viewed a Renault showcar on display at DoCoMo headquarters. Their appearance attracted a large audience of invited guests and press, who were eager to get a glimpse of the racing celebrities.

Alonso had just become the youngest-ever winner of the Formula One Drivers' World Championship Title. He told the audience: "The best thing is to win the title, not to be the youngest ever. The good thing is... to bring Spain and Renault the world championship."

About two weeks later, at the season-ending race in Shanghai on October 16, Alonso and Fisichella finished first and fourth, respectively, to clinch Renault's first F1 Constructors' Title.



## New JV to Launch Internet Auction Business

**October 11** ▶ DoCoMo and Rakuten, a leading Japanese e-commerce company, will form an Internet auction business for mobile and PC users. DoCoMo will invest 4.2 billion yen to acquire 40% of Rakuten Auction, a new joint venture. Rakuten hopes the mobile sector will eventually account for about half of its auction business. DoCoMo is pleased to gain another revenue source not tied to user traffic in Japan's maturing mobile market. Both companies see tremendous potential in the auction market.



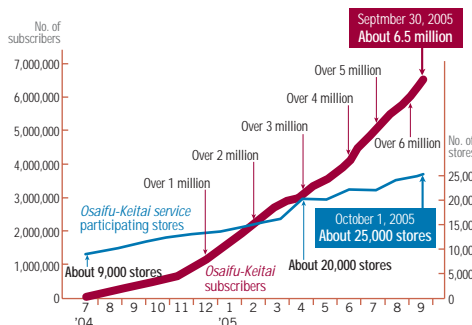
From left, Mikitani of Rakuten and Nakamura and Natsuno of DoCoMo.

## DoCoMo DATA

### DoCoMo's Wallet Services See Steady Growth

Over 6.5 million DoCoMo subscribers had "Osaifu-Keitai" mobile phones with wallet functions as of the end of September, about one year and three months after the service's launch in July 2004. As of October 1, 12 compatible handsets were on the market and could be used at about 25,000 shops and 6,000 vending machines nationwide. According to DoCoMo's Internet survey of 4,000 people with compatible handsets conducted from August 26–30, 2005, 28% (1,108 respondents) used the mobile wallet functions, mostly at convenience stores, and 81% reported they are satisfied with the services. Of this group, 99% said they intend to buy compatible handsets in the future as

well. In terms of the wallet services that users want, e-money topped the list with 58%, followed by point services and commuter tickets with 56% and 35%, respectively.



**November 8** ▶ DoCoMo announced a new iD credit card brand for card issuers, which will enable DoCoMo customers to make credit card payments with the "Osaifu-Keitai" wallet phone. The brand will be launched on December 1, 2005. Credit card owners can opt to make payments via a DoCoMo wallet phone linked to the card, in addition to conventional payments with their plastic credit card.

**November 7** ▶ DoCoMo and Tower Records Japan Inc. (TRJ) announced a tie-up to offer various services for DoCoMo phones. DoCoMo hopes to turn its handsets into powerful tools for offering music-related information and services, through its new ToruCa information capture service, for example. Meanwhile, TRJ sees great potential for the mobile phone as a marketing tool given DoCoMo's approximately 50 million customers.

**October 19** ▶ DoCoMo will launch new 902i series 3G FOMA handsets equipped for PushTalk walkie-talkie-style communication, ToruCa information capture, i-channel information updates and Multi Number assignment of up to three numbers to one phone. They will also be compatible with newly enhanced Deco-mail (in-line icon insertion), videophone (instant talk), TV program guide (including terrestrial digital programs) and security scan (automatic updates of phone software).

**September 27** ▶ DoCoMo announced the development of new P901iTV 3G FOMA handset that will receive terrestrial digital TV broadcasts, as well as analog broadcasts. Users will be able, for example, to simultaneously watch a program and access its website.

**September 14** ▶ DoCoMo announced the new ToruCa service that will enable users to obtain information about products, restaurants, movies, etc. by simply waving compatible handsets in front of dedicated reader/writers at these establishments. Information will be exchangeable with the phones of other ToruCa users.

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 "Osaifu-Keitai" refers to mobile phones equipped with a contactless IC card for useful online functions/services such as electronic money, credit card payments, electronic ticketing, memberships and more.  
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