

First European Electronic Cash System Opens for Business on the Internet

Europeans Can Now Make Cash Purchases on the Information Superhighway

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Today [EUnet](#), Europe's leading provider of Internet services, and [DigiCash](#), the leading innovator in electronic payment technology, have launched a system that lets consumers make and receive payments over the Internet--using an electronic form of cash. The "ecash" technology gives even very small payments of a few cents the level of security once reserved exclusively for large-value wire transfers, while providing users with the familiar irrefutability, privacy, and person-to-person payment capability of paper money.

The system is first being launched in [Finland](#), the country with one of the highest number of Internet connections per person in the world. [Merita](#), Finland's largest bank, already provides over 3,000,000 account holders with access to its Solo payment service. This now allows users to visit a "virtual ATM" on the World Wide Web, and withdraw money directly from their bank account into their ecash "purse". With this money they can make electronic payments to each other as well as to on-line merchants.

The merchants already accepting ecash on launch day range from popular magazines and newspapers, to those selling stock quotes and GSM paging through email. Soon, while travelling anywhere in Europe, you will be able to dial a local number and pay for your Internet access, via EUnetTraveller, using ecash. Following a successful launch in Finland, EUnet, working with major banks, intends to roll out the service during 1996, in more of the 41 countries in which it operates.

"We are delighted to be the first Internet Service Provider in the world to make the benefits of ecash fully available to Internet users" says Wim Vink, EUnet's Managing Director. "We see the ecash system as a major enabling technology that will make electronic commerce into an effective new way of doing business. Its simplicity and security features mean that users can make purchases electronically with confidence, convenience and privacy."

"We are happy to contribute to the development of a variety of secure payment systems on the Internet," says Matti Karvonen, First Vice President of Merita Bank. "Electronic commerce is likely to increase as users are able to choose a payment system that suits them best. Merita has around 200,000 customers who already use terminals for their daily banking. We believe that the number will increase further with the introduction of ecash and Solo payments."

"This launch and EUnetTraveller are really exciting new uses of ecash. As transaction costs drop, low-value payments will be catalytic to growth in electronic commerce" says Dr. David Chaum, the inventor of electronic cash and Managing Director of DigiCash. "This will let the unique advantages of ecash shine through: protecting the interest of society better than paper money, while helping people protect their own interests and enjoy the privacy and freedom they are accustomed to with cash."

[DigiCash Background](#)

Since beginning operation in April 1990, DigiCash's mission and primary activity has been to develop and license competitive payment techniques that show the true capability of technology to protect the interests of all participants.

[Dr. David Chaum](#), Managing Director of DigiCash, received his Ph.D. in Computer Science from the University of California at Berkeley, then taught at New York University Graduate School of Business Administration and at the University of California, and headed the Cryptography Group at CWI, the Dutch nationally-funded centre for research in mathematics and computer science, before taking his current position. He has published over 45 original technical articles on cryptography and also founded the International Association for Cryptologic Research.

[EUnet Background](#)

EUnet is Europe's leading commercial Internet Service Provider, offering the full range of Internet Services, serving over 100,000 customers and over 750,000 users in 41 countries. EUnet, which manages its own dedicated network infrastructure, offers full local support services in each country of operation.

Outside Europe, EUnet has developed an expanding network of national and regional service providers, with the aim of continually extending the services it offers to customers world-wide.

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[Merita Bank Background](#)

Merita Bank Ltd was formed in June 1995 from the merger of the largest commercial banks in Finland, Union Bank of Finland Ltd and Kansallis-Osake-Pankki. In Finland, Merita provides a full range of finance, payment and asset-management services for households, companies and institutions.

The retail bank serves some 3,000,000 personal customers and over 100,000 small and medium-sized businesses. At the end of September 1995, the total consolidated assets of the Merita Group stood at FIM 283 billion. Merita Bank's market share of total Finnish markka lending was 43.5 per cent, and its market share of total Finnish markka deposits was 43.3 per cent. The number of employees was 16,870.

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[Companies That Welcome Ecash in Finland](#)

[City Magazine](#) -- City Magazine is the most popular magazine among Finland's 18-35 year-olds. With interviews, fashion, the latest trends, current affairs and local events, City's nationwide circulation is 225,000. Over the last eighteen months, City Magazine's online service, 'Surf City', has grown to a consistent 30,000 hits per month. Now, when placing a classified ad in either the paper or the online magazine, customers will be welcome to pay with ecash.

[SOM](#)-- SOM, the Finnish Securities and Derivatives Exchange and Clearing House, established in 1987, serves as a neutral integrated securities and derivatives exchange and clearing house.

SOM offers real-time financial market information on stocks, options and futures via the Internet, with invoices payable in ecash. Somtel for Windows -the application that offers real-time feed, as well as simulation and position-analysis functions-, is already available via leased line.

"The use of money makes stock trading less complicated, with money acting as a practical intermediary between the transactions." states Asko Schrey, President of SOM. "However, since stock trades, as well as the shares themselves, are electronic nowadays, this conventional transmission of money has actually become a bottleneck and a threat to the development of the financial world. Therefore, SOM actively participates in projects to promote and improve the efficiency of payment traffic. We believe that electronic money will offer interesting new possibilities."

[Yomi Media](#) -- [Yomi Media Ltd.](#), a part of KSP Phone Companies Group, offers solutions in the field of digital media, information networks and multimedia. Yomi Media has opened a virtual shop which sells phone accessories and other telecommunication-related products via the Internet. And they are pleased to accept ecash. Yomi Media will provide ecash transaction services for other companies in the near future.

[Finnish Keltainen Porssi](#)-- Finland's third best-selling paper, Keltainen Porssi now accepts ecash payments. "Keltainen Porssi's business has two features that make ecash the perfect means of payment to us" explains Ari Ahola, CEO of Infosto Group. "Firstly the large number of transactions (some 500,000 weekly readers for the printed media) and secondly the low cost of each transaction. The large number of small transactions is most easily managed using DigiCash's ecash." Ahola concluded.

"Keltainen Porssi features some 80,000 classified ads per week in two printed issues. The advantages of Dynamic Database Publishing are very attractive in our type of media: The ability to crosscheck and analyse data, enter and browse the ads in real time are just a few of the new features which will be introduced in our Internet edition." added Ahola.

[MTV3 Internet](#) -- MTV3 Finland is a nationwide commercial TV channel which, with 43% share of the audience, is by far the most popular TV channel in Finland. Since the autumn the MTV3 Web service (<http://www.mtv3.fi/>) has been developing a media that combines news and entertainment with the possibility to include advertising. With ecash it is now possible to do real-time shopping at the MTV3 Marketplace.

[MicroMedia](#) -- MicroMedia is a private Finnish direct marketing service house specialized in business-to-business marketing. The Address File lists 300,000 Finnish decision makers at 135,000 offices.

[How does ecash work?](#)

Using ecash is like using a virtual ATM (Automatic Teller Machine). When connecting to it over the Internet, you must first authenticate your ownership of the account, and then request the amount of ecash you want to withdraw. But instead of putting paper cash in your wallet, your software stores the digital cash it receives on the hard disk of your PC.

When you want to make a payment, you simply confirm the amount and the payee (you can add a description of the items bought, or services wanted, if it is helpful) and then your ecash software transfers coins of the correct value from your PC direct to the payee.

Merchants, (ranging from casual participants in the global Internet bazaar to mega-retailers), can deposit the digital coins they receive into their ecash accounts.

Behind the user interface, your computer actually creates some 'serial' numbers for the electronic coins based on a random seed. Then it hides them in special encryption envelopes, sends them to the electronic bank for signature and, when they are returned, removes the envelopes while retaining the bank's validating digital signature on the 'serial' numbers. This way, when the bank (eventually) receives the coins you spend, it cannot recognize them as coming from any particular withdrawal because they were hidden from the bank by the envelopes during the withdrawal process. Therefore the bank cannot know when or where you used a shop, or what you bought.

The number of each signed coin is unique, allowing the bank to be sure that it never accepts the same coin twice. In case you wish to identify the recipient of any of your payments, you may subsequently decide to reveal the unique coin number and use your ecash software to prove that you created it.

[How safe is ecash?](#)

Security is fundamental to electronic cash. The cryptographic coding that protects every 5 cent ecash payment is the same as that routinely relied upon for authenticating requests to move huge sums between banks and even for national security. But in principle ecash goes beyond such communications security to achieve true multiparty security: no one (buyer, seller, bank) can cheat anyone else, no matter how they might modify their own software. Even if two parties collude, they cannot cheat the third.

Replacing paper and coins with ecash would make life much harder for criminals. Because the payer's computer chooses the serial numbers of the coins, he or she can later irrefutably identify blackmarketeers, extortionists, and acceptors of bribes--were they to accept ecash. Paper notes, briefcases full of which can be passed from hand to hand without leaving any record, allow money laundering and tax evasion today. With ecash, however, all the amounts each person receives are known to their bank. Significant criminal activity could thus be thwarted by completely replacing paper money; moreover, the privacy of ecash would be essential to widespread acceptance of any electronic payment system.

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