

Europay, Client and Partner

Presented to BT International Account Management

Day Two June 4th 1998

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and associates



Evolution of the Global Village

- Telephony
- Computing
- Mail
- Information
- Logistics
- Entertainment
- Transportation
- Retailing
- Payments
- Identification

**Technology is driving
the convergence of**

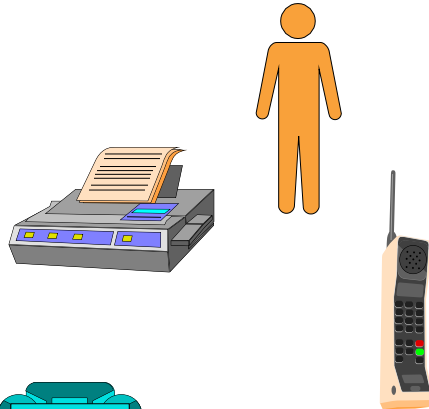
Consumers Are Driving Towards a Device Independent Environment

Internet

Intranet

ISDN

GSM



Voice

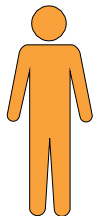
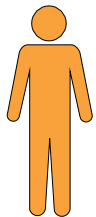
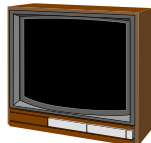
Video

Data

EDI

email

Multimedia

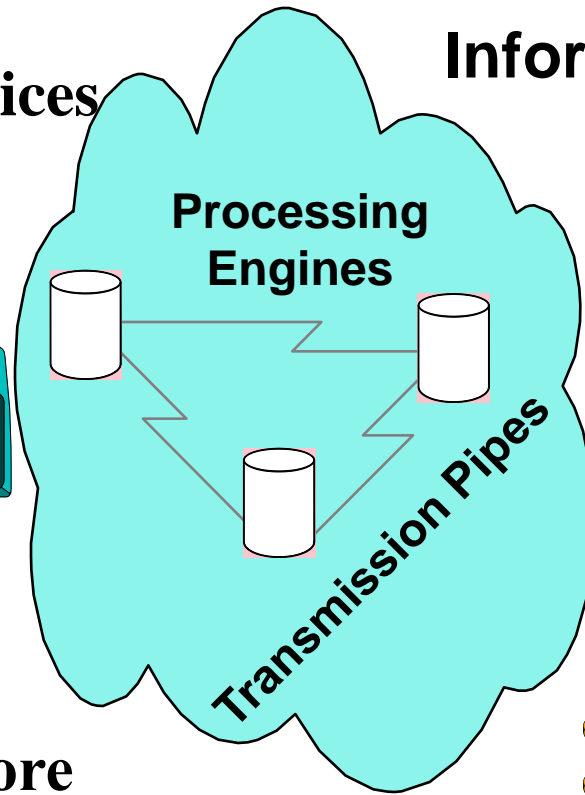
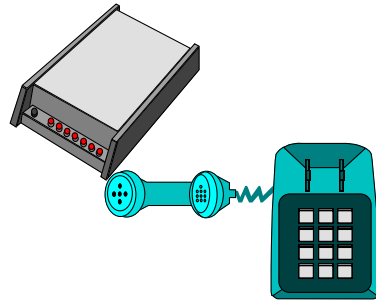
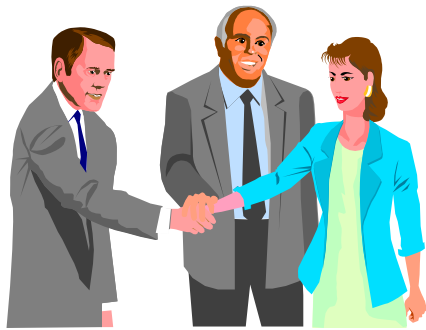


- Home, office, car, plane, hotel and airports are all places business travelers access Internet or Intranet
- The need is no longer simply to talk. It is also to access e-mail, shopping malls, information warehouses and corporate resources
- Reachability is essential as the balance between work and leisure time becomes a life style issue

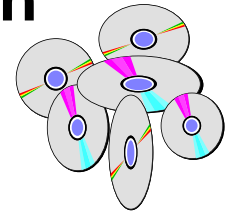


Evolution of the Global Village

The consumer is **buying products from a Globe full of merchants and service providers offering an assortment of goods and services**



Information



Content



Entertainment



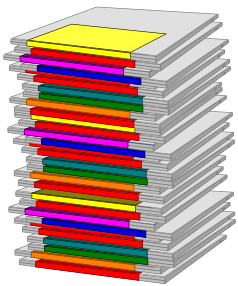
Payment

He/She does not want to support country specific “means of payment” and is more interested in **content and convenience**

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In the 60's the Internet Was Born^{© 2006} in '95 the Internet Was Found

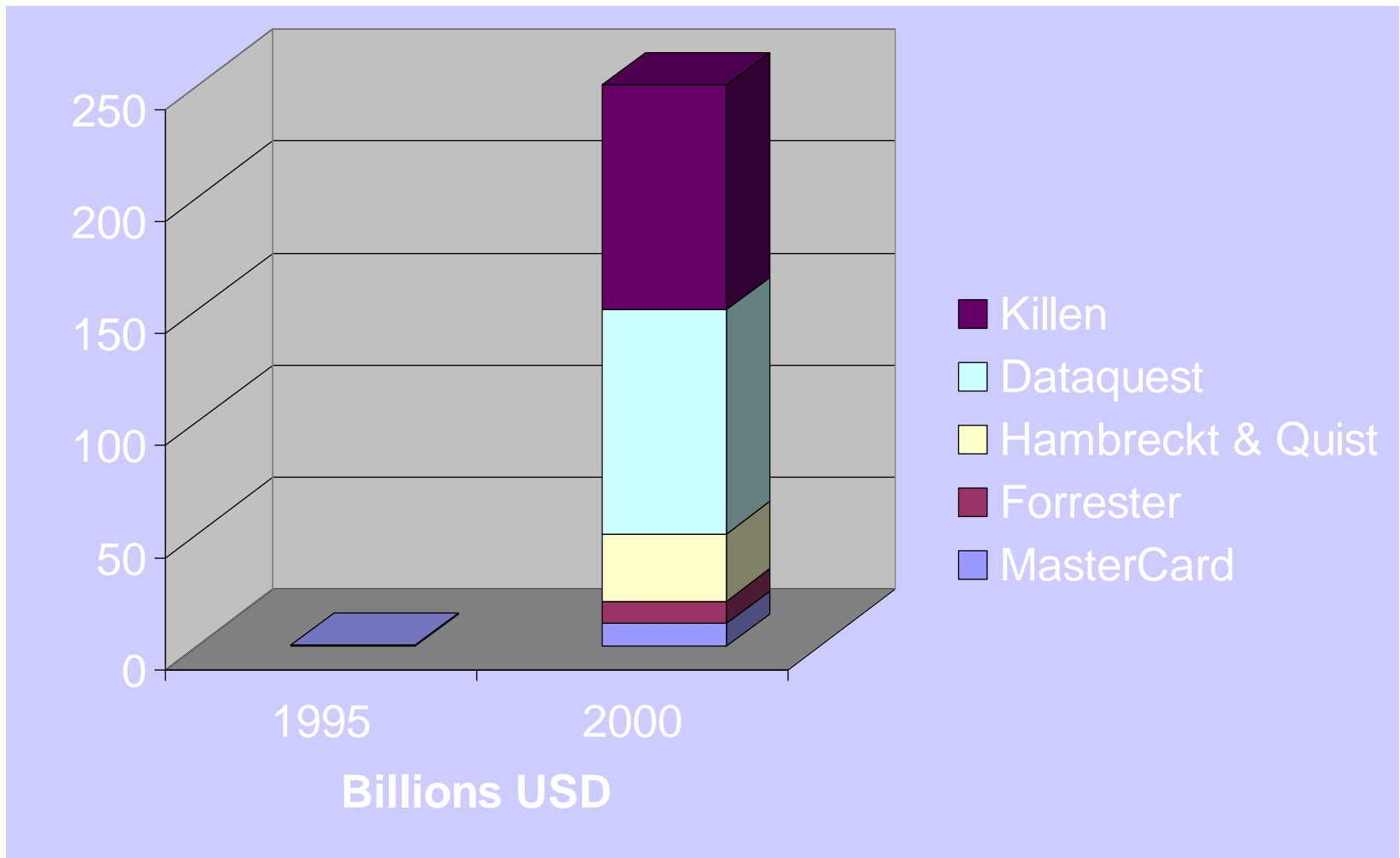
Access



Hosting

- The opportunities to create a new form of mail order is now
- Micro-payments and the concept of pay per view is reality
- Today We Are Here to Assure Our Clients That Electronic Commerce Is Enabled in The Global Village

Electronic Commerce Set to Grow





Let Us Focus On Reality

- **Without an effective means of payments for the Internet electronic commerce cannot thrive**
- **Some argue that we should re-invent the payment systems because the Internet is new and different**
- **Some claim that the Internet makes bankers redundant and that virtual money is the future**

All See Opportunities For Exploitation and Profit

A Mystical Battle Is Underway

YET

- Telecommunications
 - Wants to create minutes on their networks
 - Demands security
 - Seeks loyalty
 - Pursues quality
- Banking
 - Plans to enhance and manage payments
 - Demands security
 - Seeks loyalty
 - Pursues quality

**Competition Over What?
Is the Question the Consumer Is Asking**



Telecom Provider Face a Dilemma

Smart Networks Versus Smart Cards

- Network paradox

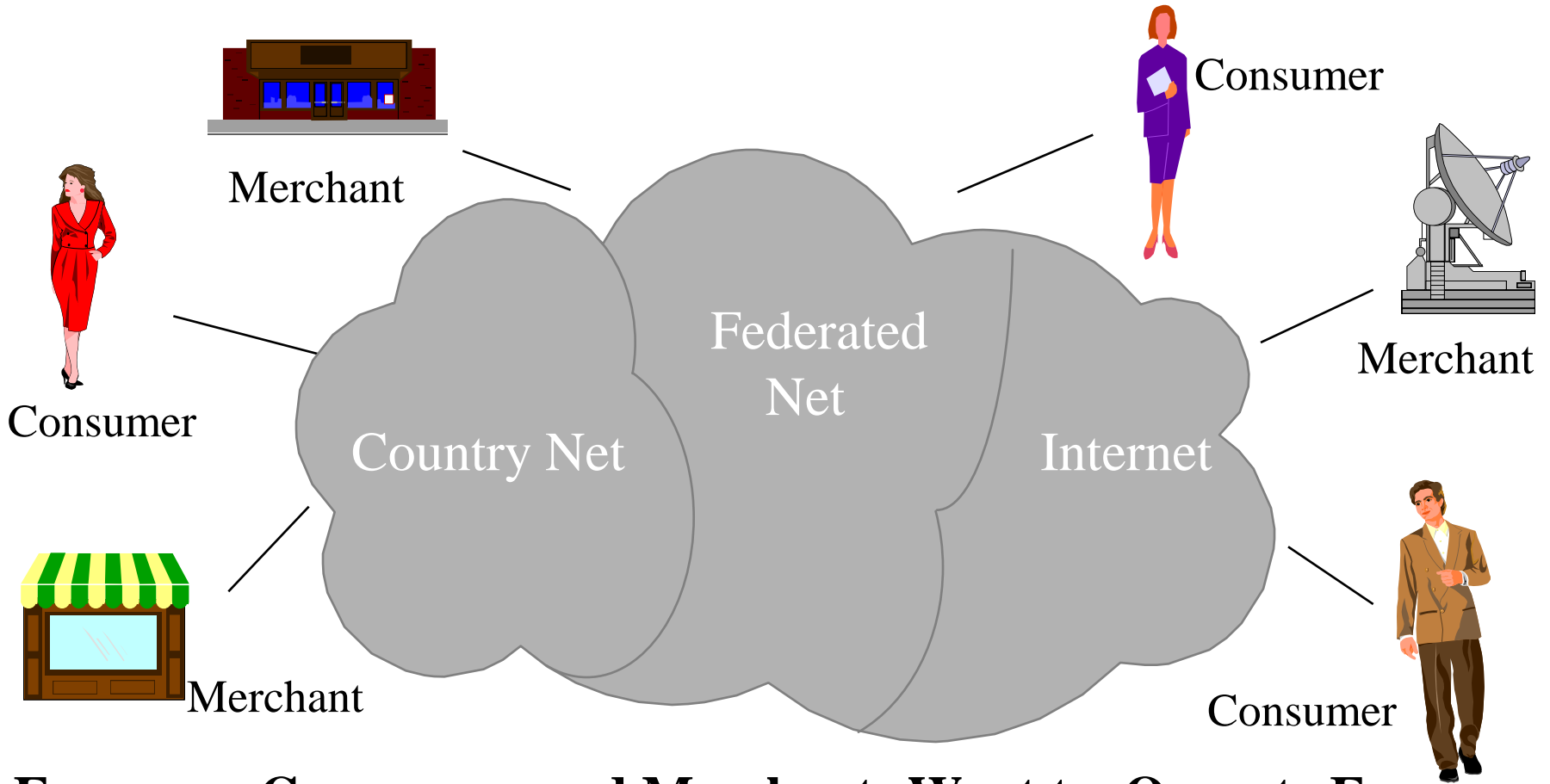
- Central resources simply require account numbers and passwords
- Capacity and capabilities are limitless
- Distance is cost insensitive

- Device independence

- Consumers demand ease of use
- Single source supply is not acceptable
- Location cannot be a determinant



CountryNet, WorldNet & Internet



European Consumers and Merchants Want to Operate From Anywhere and Will Expect Everything to Work the Same



Market Dynamics

Is the Internet Different?

- **Do the roles in the new world change or is it only a new channel used to match a buyer to a seller ?**
- **Does the consumer want another means of payment or are the consumers comfortable with the ones they now use?**
 - **Cash**
 - **Cheque**
 - **Debit Card**
 - **Credit Card**
 - **Business Card**
 - **Personal Card**

- **Existing merchants view the Internet as a means of**
 - **Expanding their customer base**
 - **Reducing their store-front overhead**
 - **Adding a new global sales channel (like mail order)**
- **Wholesalers view the Internet as a means of establishing a direct consumer distribution channel**

- **Is a unique mechanism required to secure the means of payment details?**
 - **Is it an issue of perception or incremental criminal risk?**
 - **Do we need weak or strong encryption?**
- **Who should assure the consumer that the merchant and the goods sold are authentic?**
- **Who should assure the merchant that the consumer is authentic and his means of payment is guaranteed?**

Virtual (Consumer to Business)

- **A new definition of soft goods downloaded over the Internet is envisioned**
- **Some see a world where every consumer offers goods for sale the consumer producer could emerge**
- **Consumer advocates talk about anonymity**
- **The moral right and the religious left worry about what we can see and purchase**



Market Dynamics

Paper Does Not Work in the Virtual World

- **Today's credit and debit card products are not economically under \$ 5-10**
- **Replacing checks with an electronic form can be achieved in many ways**
- **Employing a cleared payment system requires a means of consolidating many small value transactions**
- **Creating a cash substitute means making sure it cannot be counterfeited and that it is socially acceptable**



Yet There Are Differences Between the Virtual and the Real World

- **Where does the merchant reside?**
- **Under who's tax regime is business on the Internet conducted?**
- **How is the delivery of goods assured?**
- **Will truly global merchants emerge?**
- **How will existing distributors who are being dis-intermediate fight back?**
- **Who are the winners and who are the losers?**

- **Retain the current consumer, merchant & bank relationships**
- **Use the same payment instruments in all marketplaces**
- **Support existing and emerging merchants needs and requirements**
- **Support a wide range of values including micro-payments**
- **Provide an affordable solution**



Electronic Payment Types Now in Existence

Credit Cards	Debit Cards	Cash	E-Cash	E-Purse
<ul style="list-style-type: none">• Guaranteed Payment• Pay Later• Well Accepted• Visa• MasterCard• AMEX• Diners• JCB	<ul style="list-style-type: none">• Current Account• Pay Now• Just Gone Intr'l• Domestic• Maestro• Electron	<ul style="list-style-type: none">• Monetary Value• Pay Now• Notes and Coins• Gov't or Bank Issued• Mondex	<ul style="list-style-type: none">• Soft Solutions• Pay Before• Requires Digital Signature• New• DigiCash• Cybercash• . . .	<ul style="list-style-type: none">• Smartcard Solution• Pay Before• Requires Digital Signature• New• Domestic x• Clip• VisaCash

- **Symmetric**
 - **Typically based on DES**
 - **Requires two parties to share a secret**
 - **Requires trusted hardware for the secret**
 - **Used For PIN block today**
- **Asymmetric**
 - **Current favorite RSA**
 - **Any party can encipher or authenticate another**
 - **Hardware only required by one**
 - **Base for both EMV and SET**

- **Public key asymmetric cryptography can provide a means to authenticate the parties and secure the details of the means of payment**
- **Electronic purse and e-cash products exist because of cryptography**
- **Some argue that personal computers can not secure secret keys**
- **Some advocate the use of a smart card as the consumer's access key**



The Key is the Certificate Authority

- **What responsibilities are embedded within the certificate authority?**
- **Will we need one for each application, means of payment or issuing organization?**
- **Which are the organizations that are or can be trusted by consumers, merchants and governments?**
- **Is it efficient to have global and national certificate authorities?**

- **Which model does BT wish to support as the most appropriate electronic purse of tomorrow?**
- **Is a true cash substitute required?**
- **Should monetary systems remain regulated?**
- **Does the advent of the Internet offer entrepreneurs and philosophers the chance to re-inventing the payments systems?**

- The Payment Protocol Must Be Defined
 - The goal is to facilitate merchant payments and consumer utility
 - BT could involve itself in developing these standards
- Electronic Commerce
 - The capability of two parties to trade over a network
 - Each party must trust the counter party
 - Who will offer this ability to trust

Without a Definition of Electronic Commerce Much Remains Unresolved



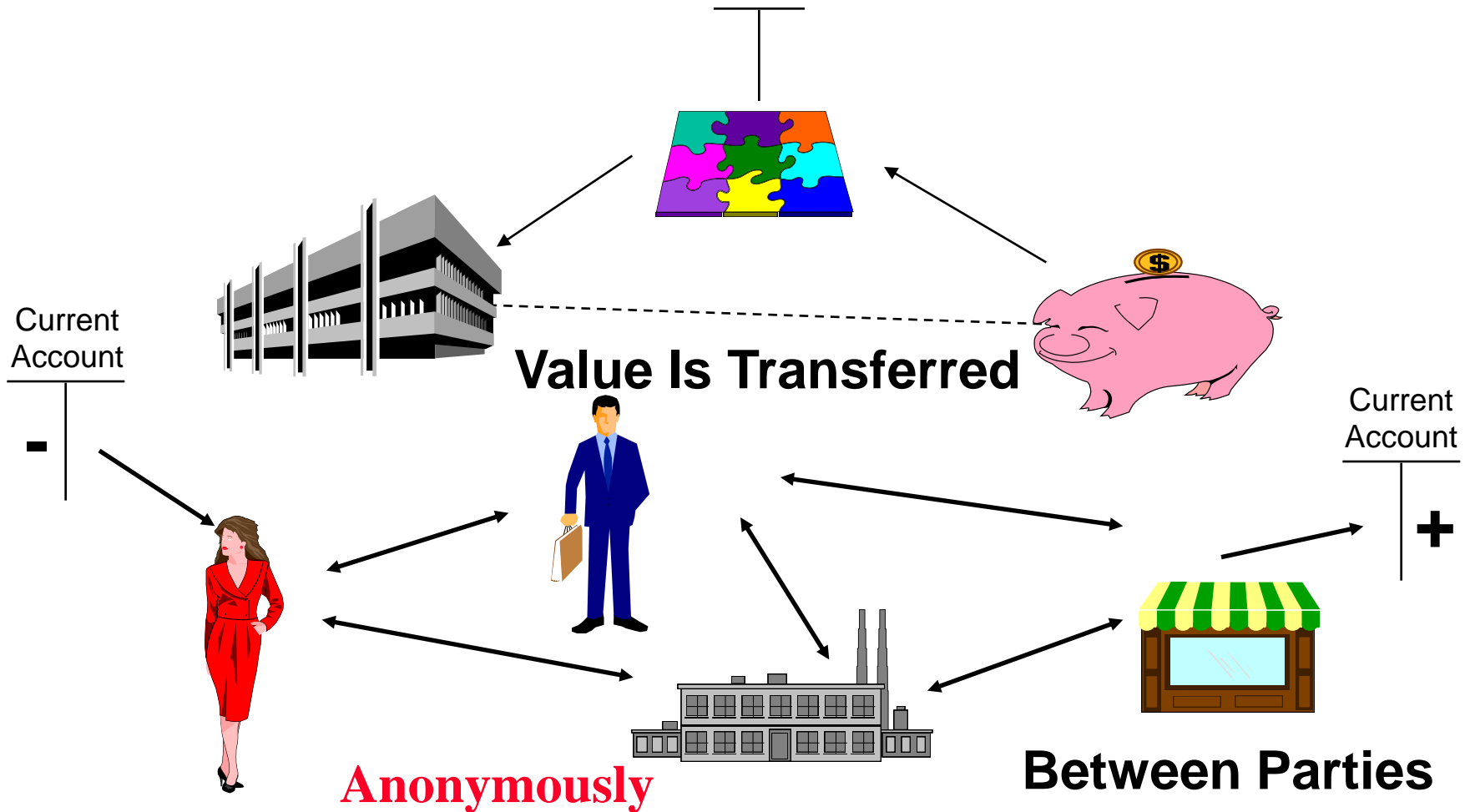
Interoperability

Not Competition Is The Key

- **The payment and smart card suppliers prefer proprietary solutions**
- **The banks want global interoperability**
- **The Internet only works when interoperability exists**
- **Everyone Preaches the Open Architecture Line and Recognize That a Common Infrastructure Is Essential for Profitability**
- **Yet Everyone Is Competing Over the Basic Infrastructure**

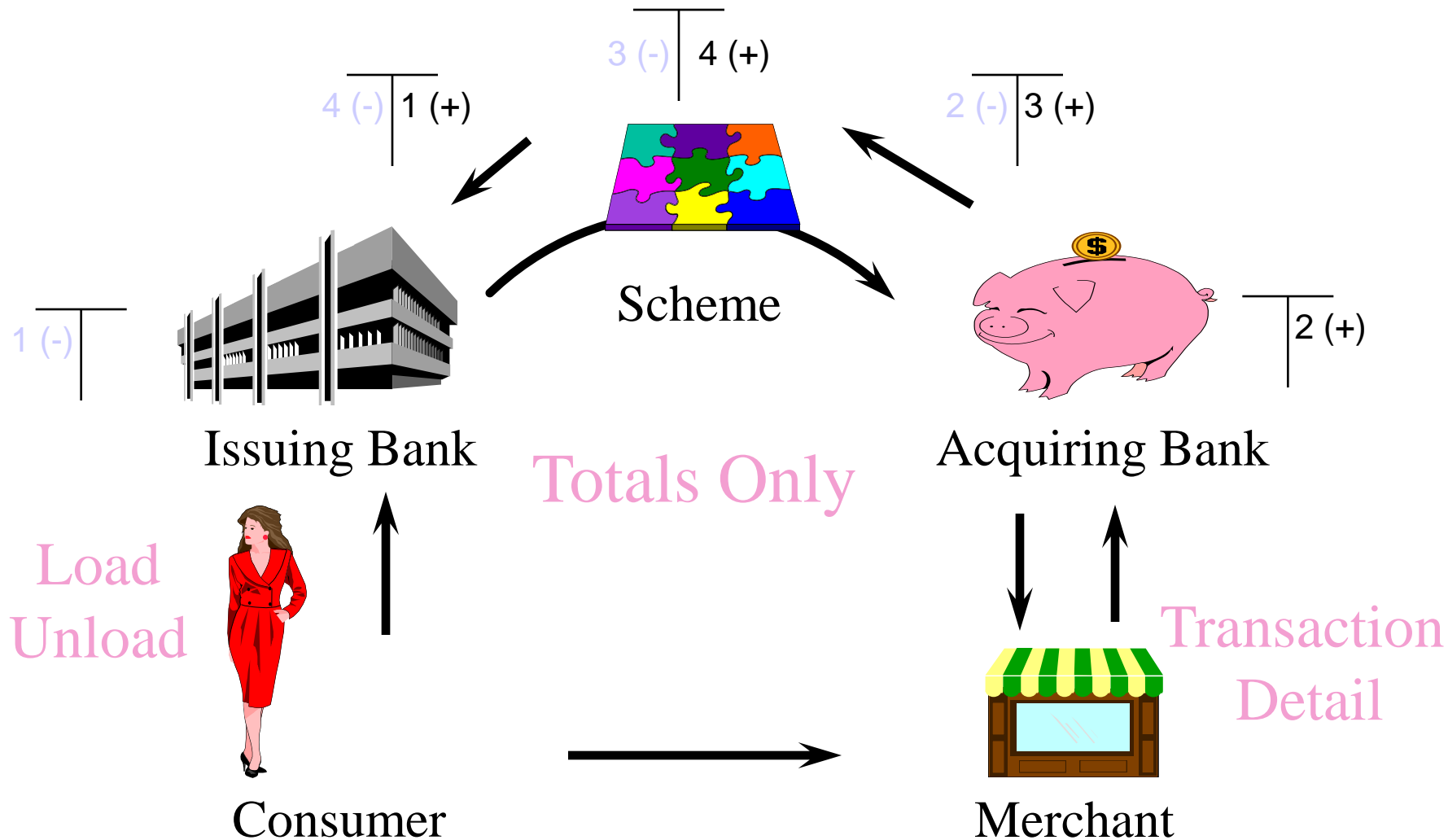
Mondex

Anonymous, Trusted and At Your Own Risk

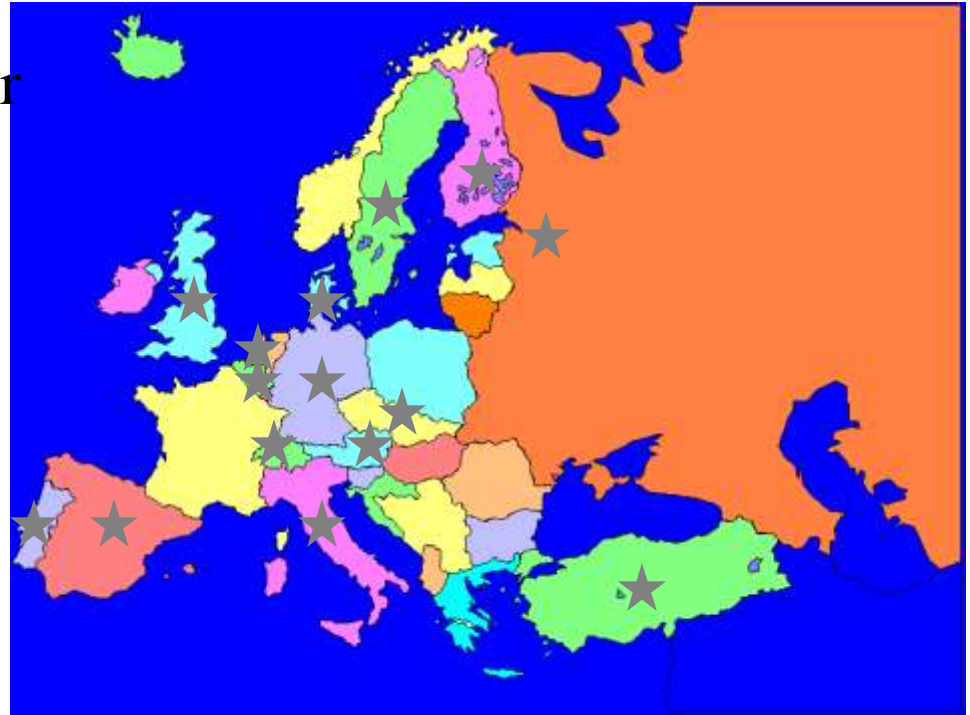


Cleared Payment Systems

EN 1546 - The Standard for Electronic Purse



- More than 20 domestic purse schemes in Europe for instance:
- end 1997:
 - 75 million purse cards issued
 - 300 000 acceptance terminals
- We are now in a migration situation



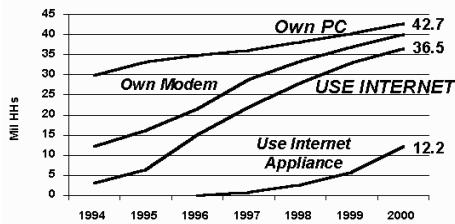


The E-Purse Market Situation

- None of these schemes are interoperable
 - Based on different versions of standards available at that time (WG10-EMV1)
 - Sometimes incompatible schemes exist in the same country
 - Cross-border transactions are not possible, even if the same technical platform is used (DES based purses, different applications)
 - Business case for cross-border purses is not clear yet

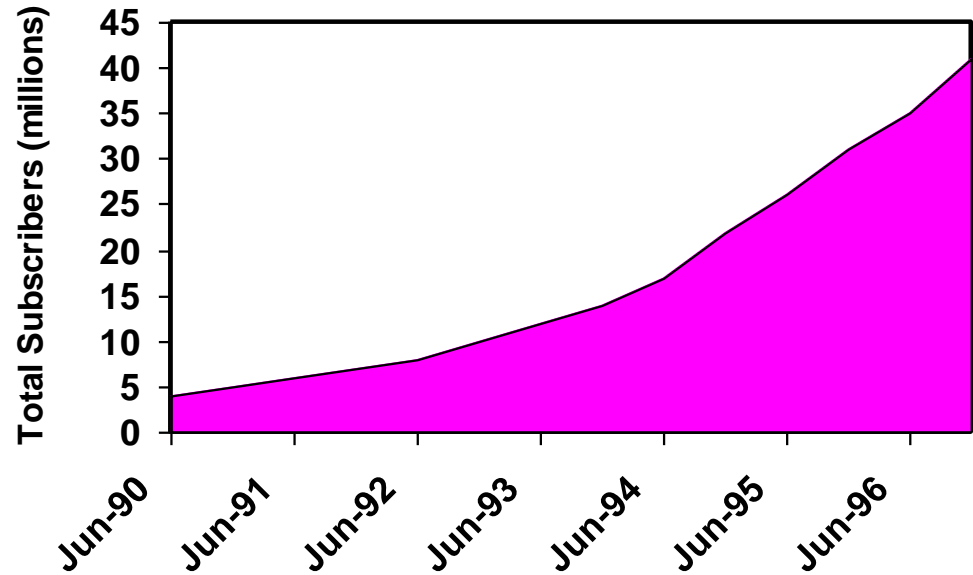
Consumer Electronics

Internet Household Forecast



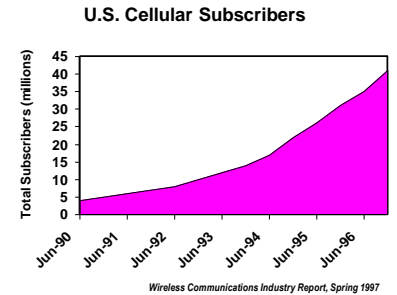
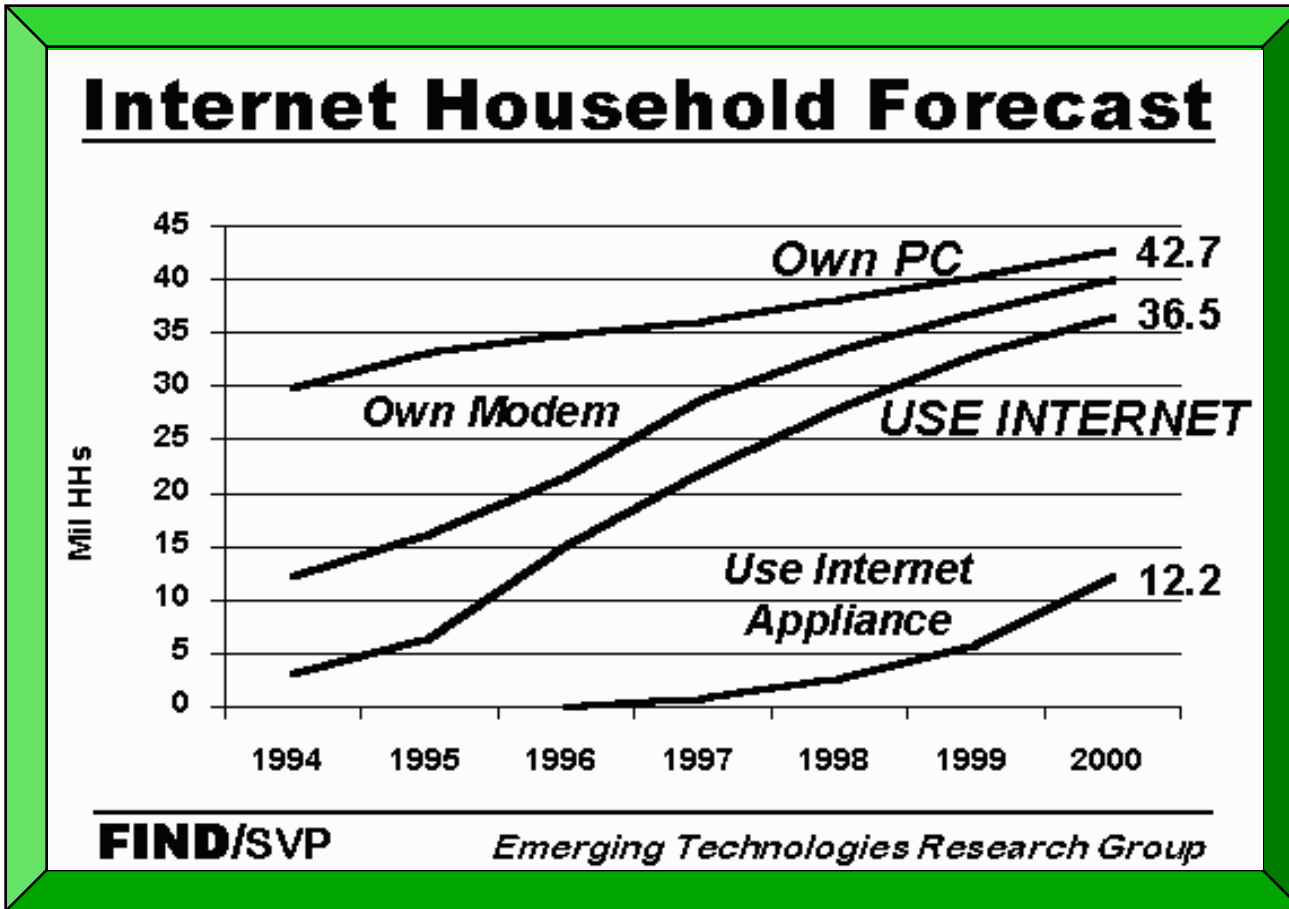
FIND/SVP Emerging Technologies Research Group

U.S. Cellular Subscribers



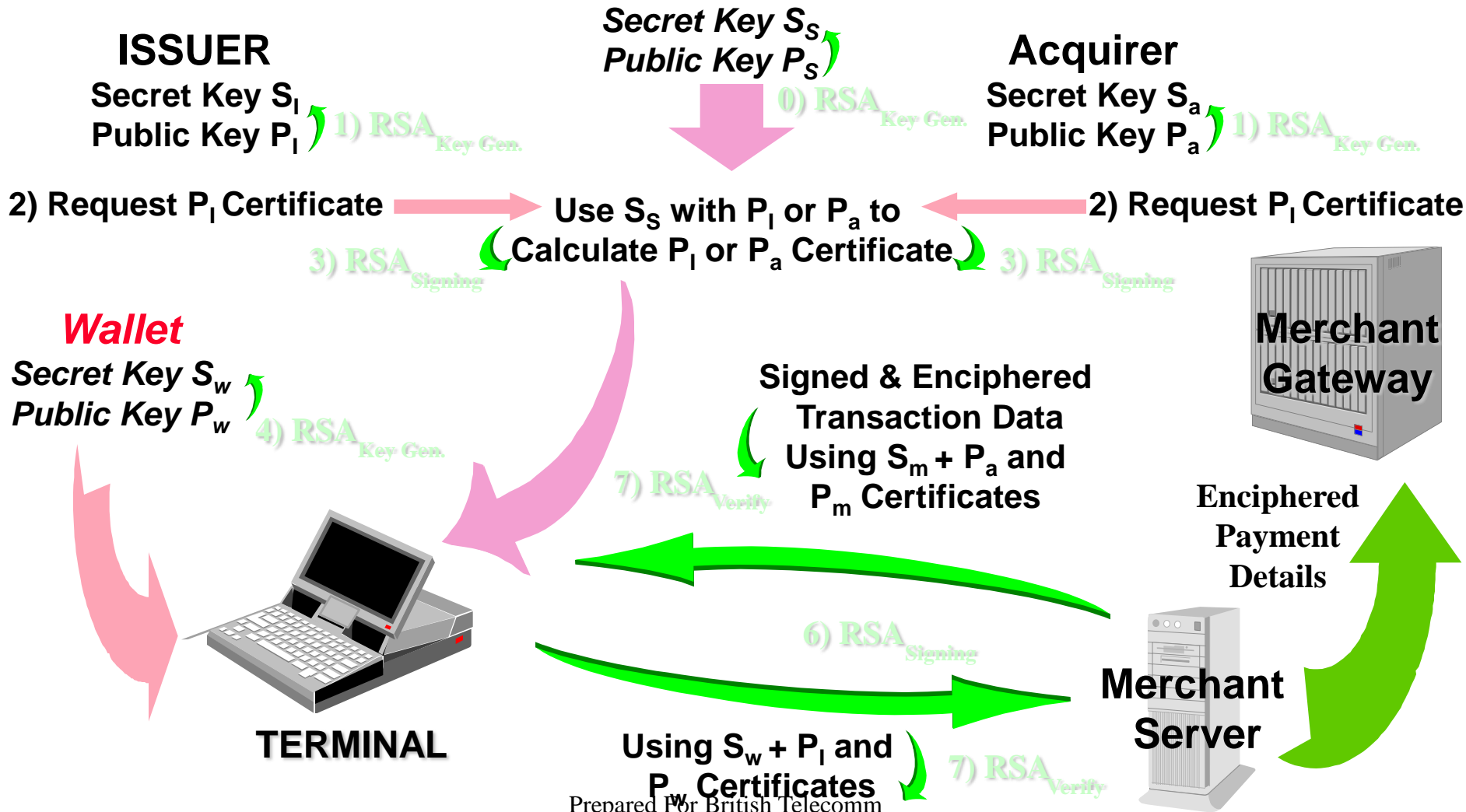
Wireless Communications Industry Report, Spring 1997

Internet Growth

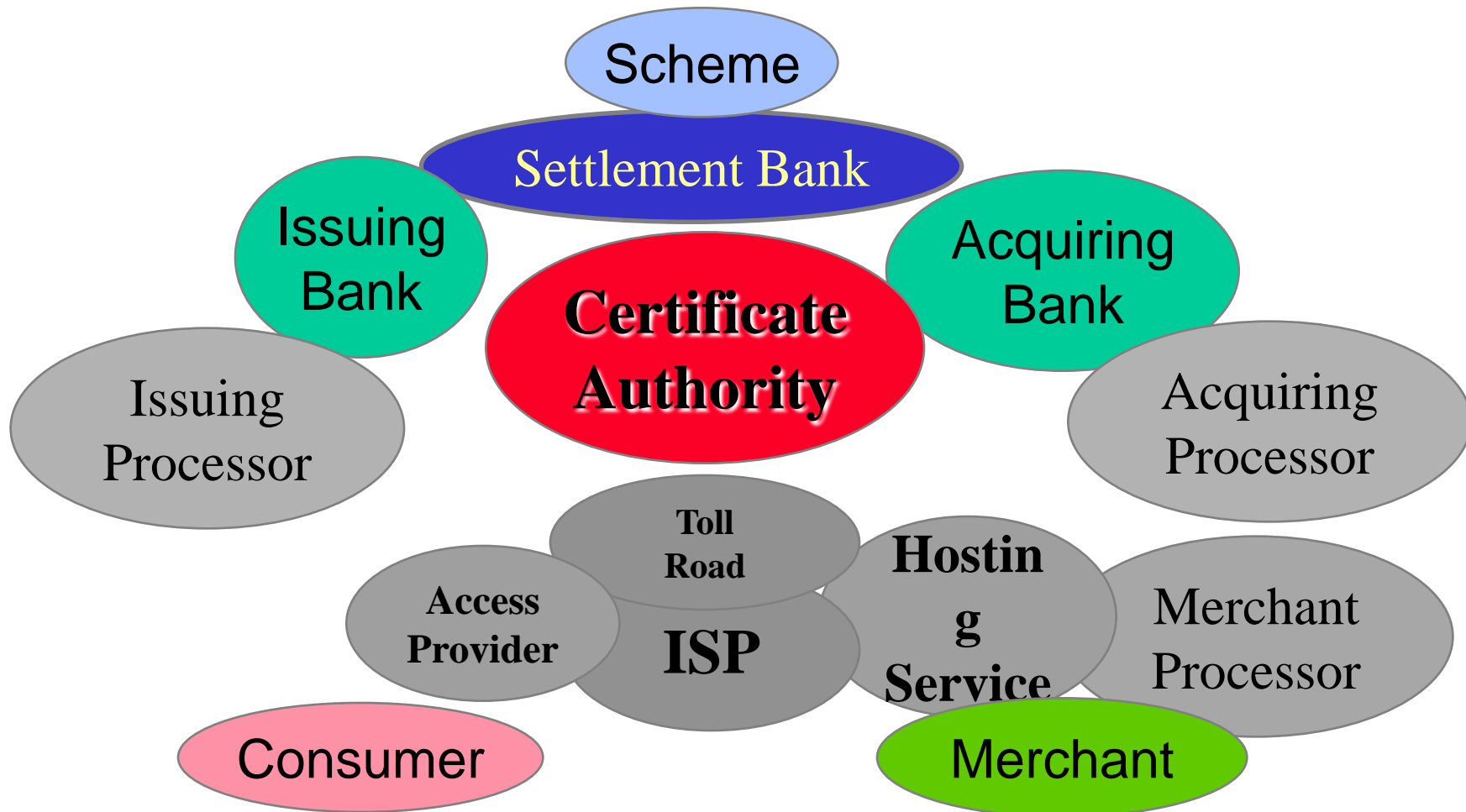


Authentication for the Internet

Payment Scheme



Actors In the Internet Game



In this concept:

- The merchant will have the following needs:
 - **Reliable identification of customer**
 - **Digitally signed order/contract**
 - **Address information**
 - **Time stamp**
 - **Directories**
 - **Catalogues for certificates**
 - **Electronic mail boxes**
 - **Encrypted communication**

In this concept:

- The customer will have certain needs:
 - **Reliable identification of merchant/service provider**
 - **Signed confirmation of order, delivery time and conditions**
 - **Signed receipt on payments**
 - **Digitally signed contract or value paper**
 - **Catalogues for certificates**

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Integration for the Fat Minute

Ombudsman

Customer Choice & Control

These Are The Requirements

- Information Sector**
- > National Identity
 - > Health
 - > Passport
 - > Access
 - > Social Insurance
 - > Drivers License
 - > Donor

- Automotive**
- > Registration
 - > Security
 - > Insurance

- Transport**
- > Tolling
 - > Road Access

- Finance Sector**
- > Guarantee of Payment
 - > Means Of Payment
 - > Monetary Regulation

- Service Sector**
- > Loyalty
 - > Rewards
 - > Library
 - > Clubs

- Personal**
- Diary
 - Communications

Life Style

Society

Security & Isolation

Business

Family