Requirements of Commercial Parties

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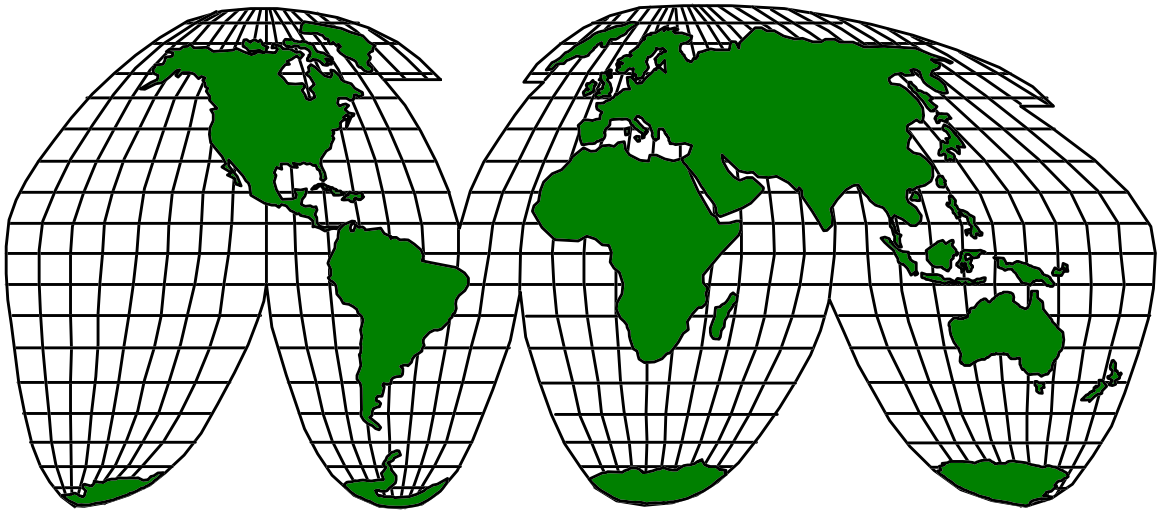
Outline

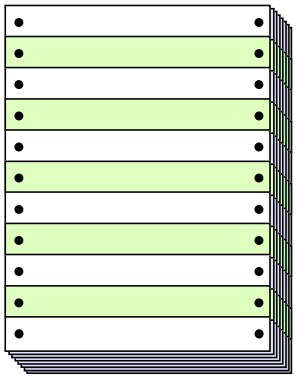
- Types of E-commerce
- Threats in E-commerce
- Security Tools
- Risk Management
- How to Secure E-Commerce Economically
- Conclusion: Key Requirements

Types of E-Commerce

- Examples from SEMPER
  - Mail order-like electronic catalogue sales
  - Sale of information from databases
  - Sales of consultancy
  - ...
- Other
  - Banking
  - Contracts
  - Certified mail
  - ...

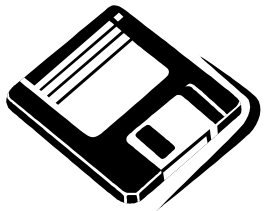


Flexibility Required for Sales



- Different types of documents
  - such as offer, order, receipt
  - with specific data fields

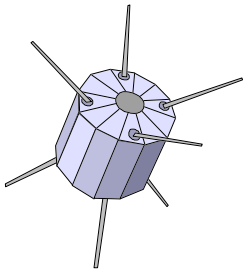
- Configurability
  - different processes
  - steps out-of-band



- Import and export of records

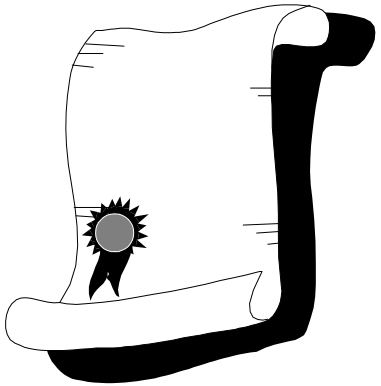
Threats in E-commerce

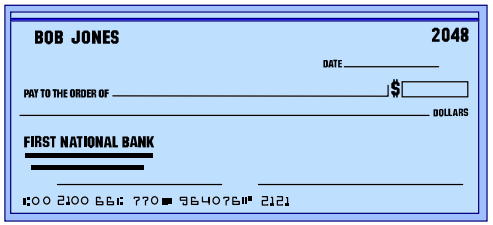
- Today
  - Not getting paid
  - Not getting what was offered
  - Not getting a receipt
  - Loss of confidentiality
  - ...



- Increasingly
  - Fake documents
  - ...

Security Tools

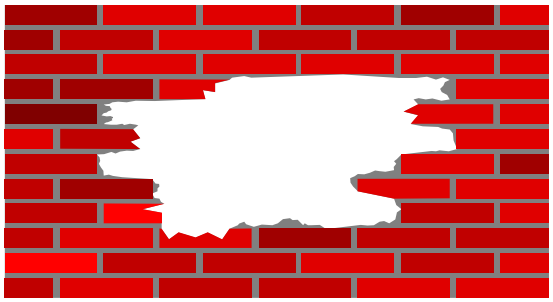




- Digital signatures and CA-services
  - Class 1-type
  - French/German rules: I/O
- Encryption
  - SSL long/short keys
  - PGP
- Payments and banks
  - Credit card
  - E-cheque
  - Stored value
- Fair exchange
- ...

Threats with Tools

- **Digital signatures:**
  - **Trojan horses**
    - **Organized crime**
  - **Eavesdropping of password**
  - **Relying party losing at court**
    - **Effect of Trojan horse claimed**
  - **Impersonated signing party losing at court**
    - **Insurable?**
- **Payments:**
  - **Credit card payments may get cancelled**
  - **Stored value stolen**
- **Encryption:**
  - **Keys broken/escrowed**



Variety of Signature and Certification Services

- Types of registration
  - Personal registration for evidencial value
  - On-line registration
  - No registration as with PGP key rings (with paper agreement?)
- Fees for key management
  - revocation
  - statements re validity
  - CLRs (privacy)
- Costs for production (incl. certification)
  - software
  - smart cards
  - wallets with secure user I/O

Risk Management Today

- If single value low, for having low damages, sellers
  - check customer databases
  - request paper signature when delivering
  - ask for payment
    - Cash on delivery
    - Credit card
- If single value is high or likelihood of damage high, buyers and sellers don‘t do electronic commerce

Risk Management Tomorrow

- If single value is low, and damages increase
  - players will use digitally signed documents
  - sellers will ask for irrevocable payment
- If single value is high or likelihood of damage high
  - players will use digitally signed documents
  - players will use fair exchange for value against receipts
- If players use digital signatures, will new risk of perfect impersonation emerge?

How to Secure E-Commerce Economically?

Types of E-Commerce ↔ Security Tools

- Examples from SEMPER
  - Mail order-like electronic catalogue sales
  - Sale of information from databases
  - Sales of consultancy
  - ...
- Other
  - Banking
  - Contracts
  - Email
  - ...

- Digital signatures and CA-services
  - Class 1-type
  - German Signature Law
- Encryption
  - SSL long/short keys
  - PGP
- Payments
  - Credit card
  - E-cheque
  - Stored value
- ...

Economically Efficient Usage of Tools I

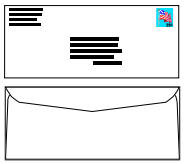
- Freedom of choice of tools
  - Players make cost/benefit analysis when selecting a tool
  - Players have to adhere to different legal settings
  - Players want competition between providers of tools
- Usability of tools for different business processes
- Low costs for adaptation of business applications and tools
- If business application integrated into other systems:

  no need to modify adaptation for new tools

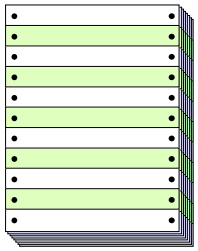
Economically Efficient Usage of Tools II

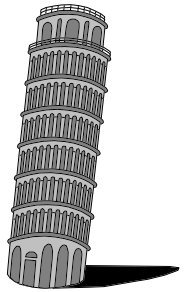
- Usability by everybody

- Single way to negotiate protocols

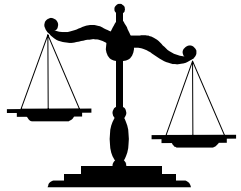


- Support of forms
  - for transfer of information between document types
  - for verification of content
  - for language support



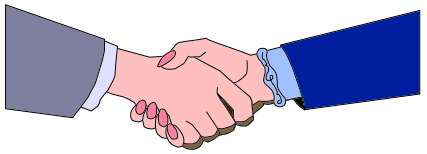


Economically Efficient Usage of Tools III

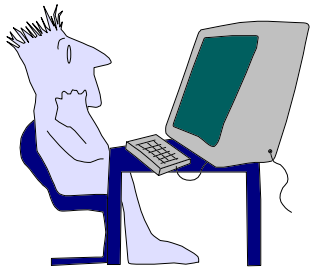


- Legal certainty achievable

- Limitation of possible damage must be possible
  - loss of house, prison



- Openness for fair behaviour
  - e.g. signed offers, receipts



- Single user interface for tools and management of keys

Conclusion: Key Requirements

- **Economic to have for all users:**
  - integration of tools only once
  - choice of tools as secure and fair as requested
  - integration of business applications only once
  - single way to negotiate protocols
  - single user I/O
  - transfer of information from document to document
  - verification of contents of documents
  - isolate backend from tools
- **Options to be selected by users:**
  - one legal framework for non-repudiatable documents, with option for liability limit
  - services for signing, payment, encryption, fair exchange
  - business processes
  - types and fields of documents