

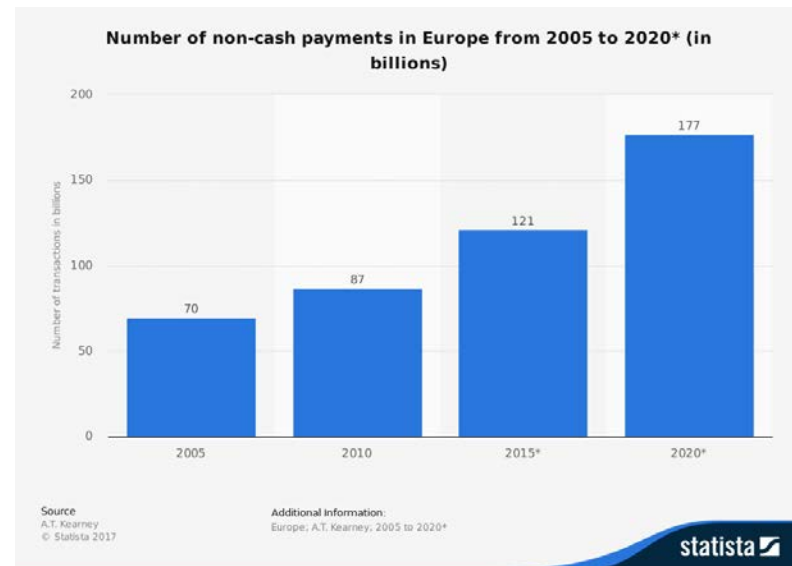


openHPI – Internet Security Privacy: Payment and Bonus Systems

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Cashless payment rapidly spread

- Surveys show that cash payments will lag far behind card or mobile payment after the next 10 years
- Many European countries have limits for cash payments (to 1,000 – 5,000 Euro)



But: Every electronic transaction leaves **digital traces**

- Digital traces involved in transaction processes usually remain **non-transparent** to consumers
- Differing **national legislations** on data protection also affects financial transaction data

➔ Let's look at different **payment systems** in the following

Various Card Systems

■ „Credit“cards (all international)

- VISA
- MasterCard
- AmericanExpress



■ „Debit“cards

- Electronic Cash / Girocard (Germany)
- Maestro (by MasterCard) (international)
- V Pay (by VISA) (international)



■ Electronic purse (stored-value cards)

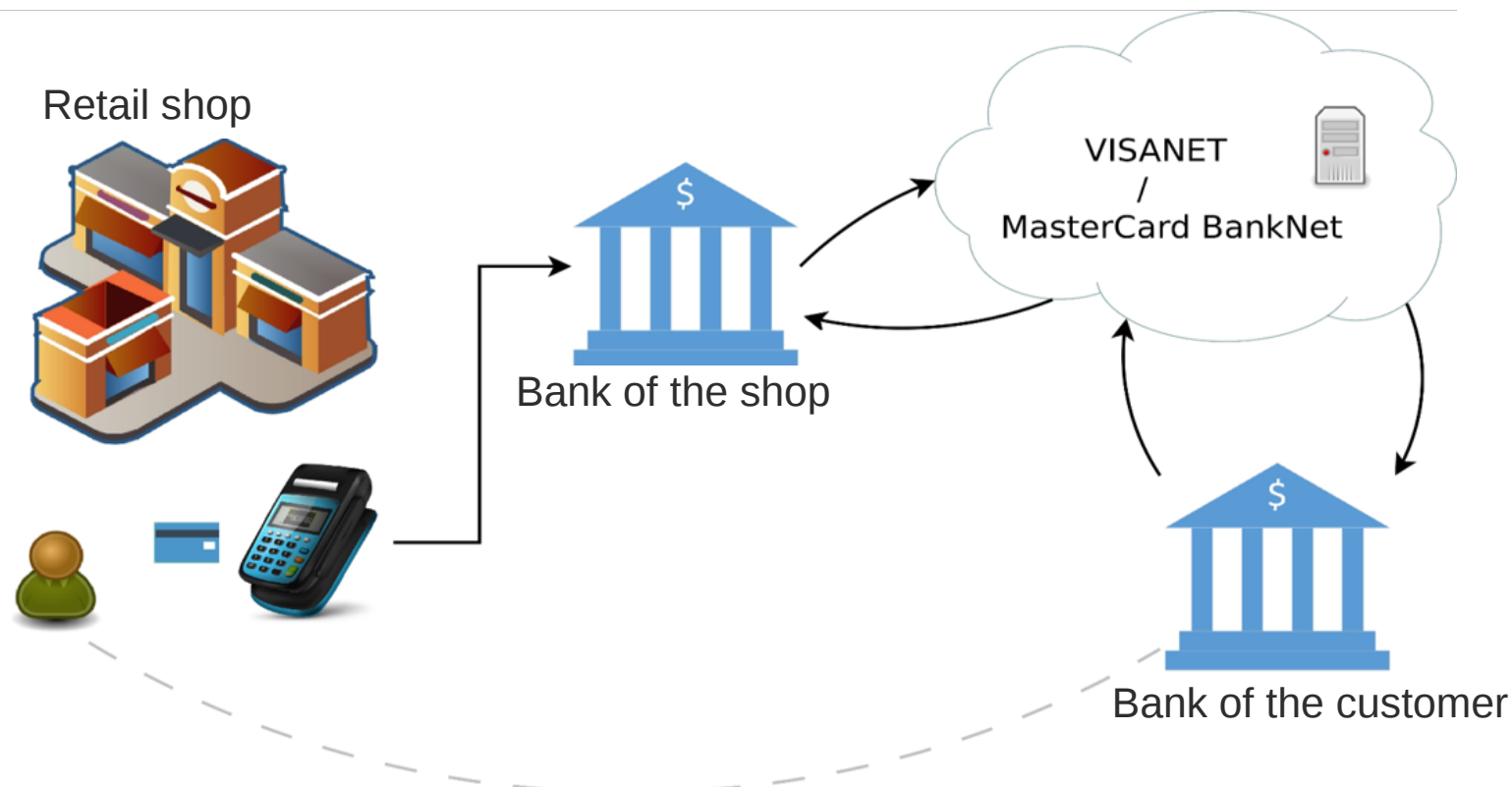
- GeldKarte, Girogo (Germany)
- Octopus card (Hong Kong)



Data Transfer During Payment: VISA / MasterCard

During purchase data will be sent to the USA via VISANET / BankNet

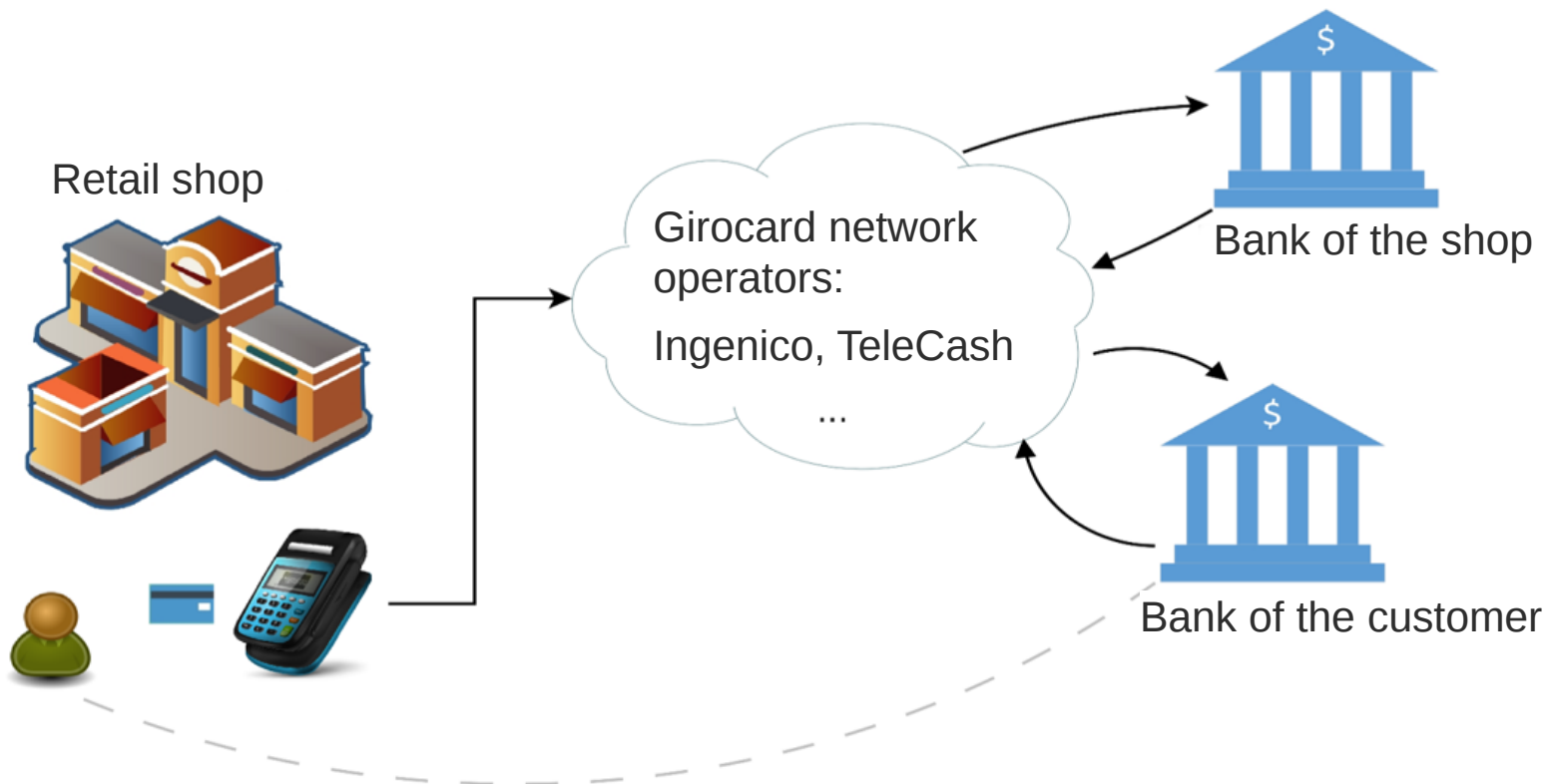
- Data protection law in the USA differs significantly from European and/or German law



Data Transfer During Payment: Electronic Cash / Girocard (1/2)

When paying with EC card / Girocard, the network operator (a private company, not a bank!) deals with all inquiries

- **Scandal in 2010:** Several girocard operators took advantage of the customer data to perform credit checks



Data Transfer During Payment: Electronic Cash / Girocard (2/2)

Scandal in 2010: Several EC-operators took advantage of the customer data to perform credit checks

Background:

- Payment with PIN costs businesses relatively high fees, but payment is guaranteed by girocard network operators
- Payment with signature is "direct debit" and cheaper for the shop, but: payment not guaranteed, customer can cancel

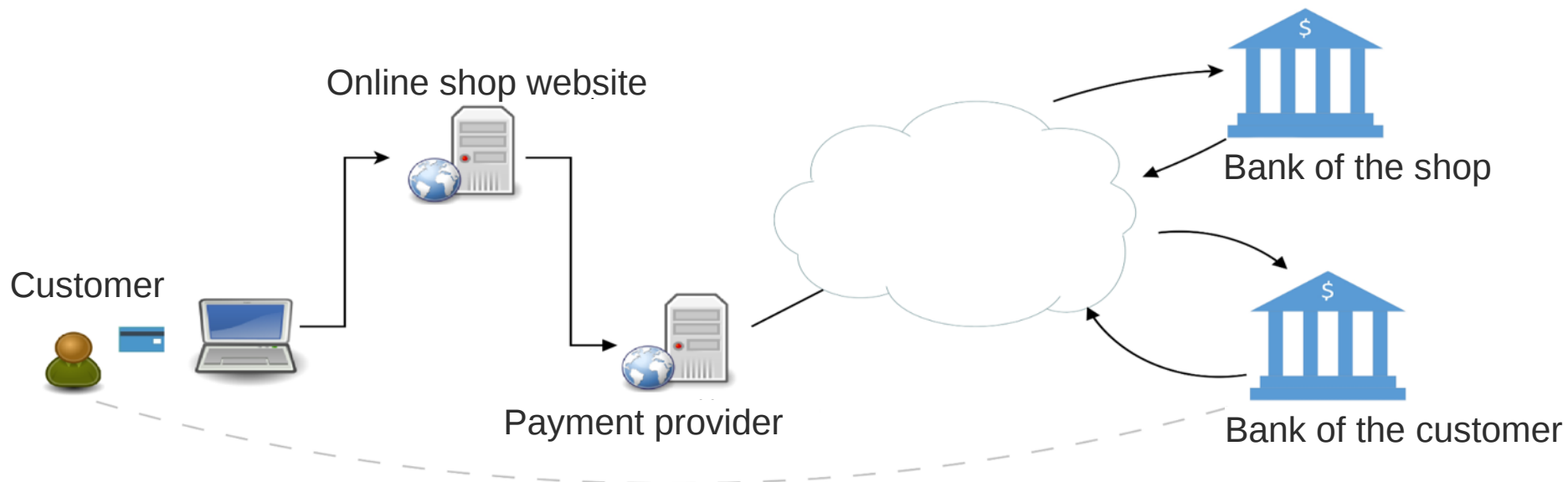
Businesses increasingly use **direct debit** to optimize their costs, avoiding where possible **payment loss** risk

- Girocard network operator checks the creditworthiness of the customer based on the customer's payment history
 - "Good" customers may also pay higher amounts with signature
 - "Risky" customers must pay by PIN

Data Transfer During Payment: Online Shopping

Online shops are relatively rarely directly linked to banks or card networks. Instead, all payments are made by payment service providers, e.g., Klarna, PAYMILL, WePay, etc.

- Payment services provider allow easy integration of many payment methods (PayPal, instant payment, "credit" cards, direct debit, invoice, etc.), thereby accessing all purchase data



Obviously, from a data protection point of view, cash payment is without peer. But there are **innovative** payment systems with increased data protection:

- **Cash26** by Number26 Bank (German institute)
 - barcode for payment is generated on smartphone
 - payment in the shop is done by barcode
 - shop does not have access to (credit / EC) card data but only to the barcode
- **Apple Pay** - Payment with Apple iPhone
 - **Advantage:** Shop does not get access to card data but only to the generated code
 - **Disadvantage:** Credit card data and fingerprint must be stored in the iPhone; transaction server in USA

Generally, make a **conscious decision** about payment methods!

Bonus Systems and Discount Cards

Discount and/or bonus cards give vendors the opportunity to collect data on purchases regardless of payment method

Goal: Targeted or group-oriented marketing

- Large providers such as "Payback" or "DeutschlandCard"
 - get data on purchases at many different stores and learn a great deal about the customer
- Business owners attempt to keep customers by offering discounts and personalized offers
- **Caution:** Discount system tempts people to buy even when without discount, despite the fact that competitors may have much better "special offers"
 - Study in Germany (NRW Consumer Centre):
Possible savings often below 1%

Conclusion

- Purchase data often reaches several service providers
 - service providers are often not banks but private companies
 - data is often stored abroad
- Use of cashless payment systems and the digital traces generated by bonus systems can be used for profile information
- “Privacy leak“ prevention is difficult because cashless payment and online purchase are very convenient:
 - purchasing with cash in a traditional shop leaves less traces than an online purchase
 - customers should make an informed decision about the type of payment used
 - data have a value. You should be compensated for giving away your own data, e.g., discount