



# Evolution of Payment systems in modern Businesses

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# Which Questions do we want to discuss today?



- Basic knowledge about payments
  - What kind of payments are there ?
  - What is a settlement ?
  - Which additional services are required to make them mobile ?
- Which payments are common in mobile business ?
- What requirements and risks are in payment processing ?
- What is the difference between Collections and Payments ?

# Cash payments versus digital payments



What kind of money transactions are possible for non-banks entities ?

## Cash



- Cash is a value carrier in itself (immediate settlement)
- Legal tender status \*
- Can be done offline and without other parties being involved

## Account to Account



- Transfer of debt obligation between banks
- Settlement between banks and clearing systems
- Separation of messaging and settlement

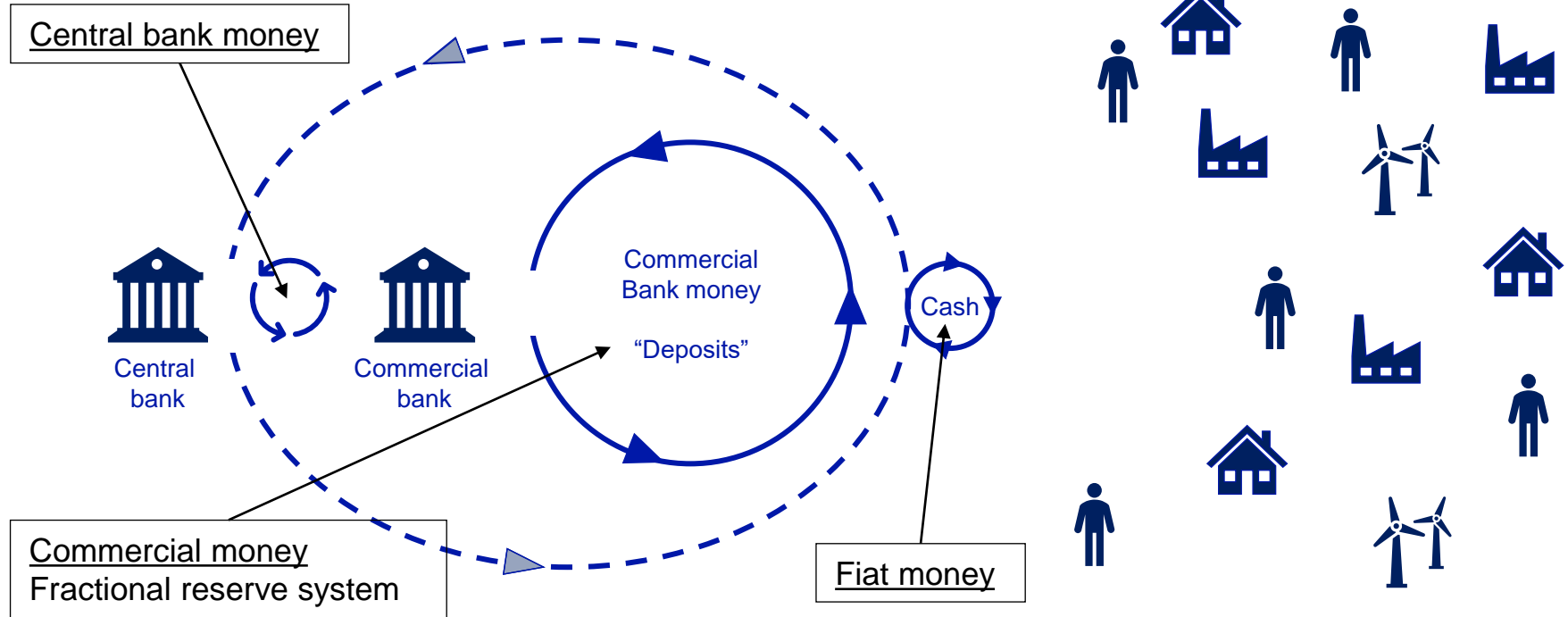
## E-Money



- Transfer on same ledger
- Settlement between accounts not necessarily needed
- Transaction outside ecosystem requires regular bank payment

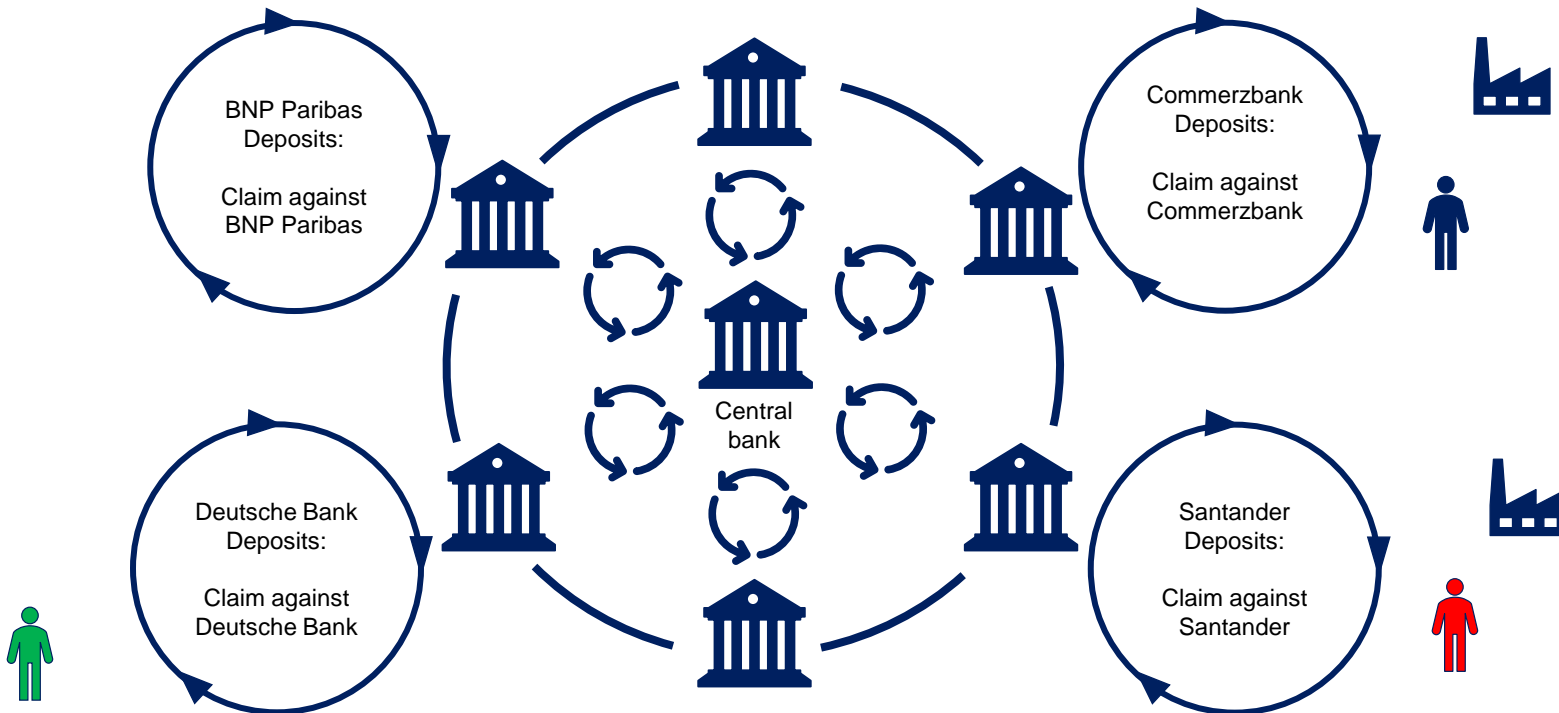
# Cash is only a fraction of the money supply

86% of the money supply is bank deposits and not cash offered by central banks

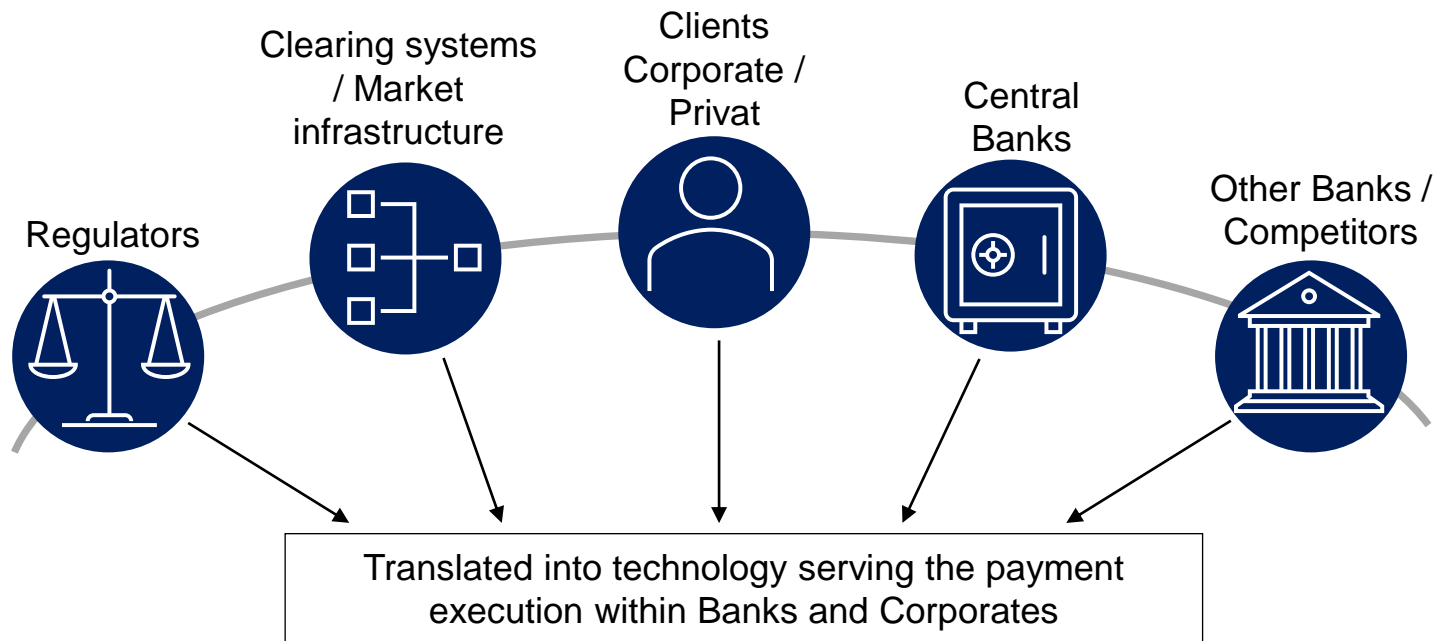


# Structure of the Current Money System

Private commercial bank money is always settled in central bank money when being transferred to another bank



# Who are the stakeholders in the Payment Industry



# Technology Change in Payment Processing



- Previous payment systems design was driven by technical capabilities of payment systems and payment infrastructure and the respective demand
- There are a lot of dependencies on regulators and central infrastructure
- Modern / Mobile businesses changing transaction behavior



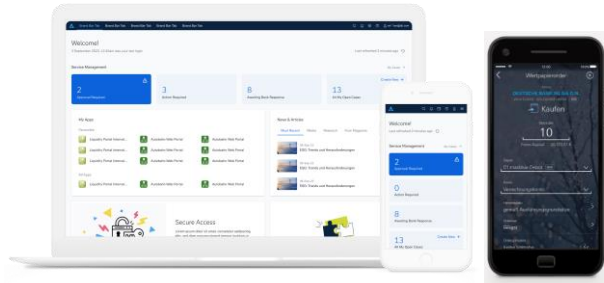
## Trends in payment usage

- Smaller amounts
- Less cash / More digital payments
- Higher transaction numbers
- More global payment chains
- Growth in FX payments globally
- Increased usage of real-time payment methods
- Stronger integration in online business
- Real-Time interfaces between Banks and Corporates



Payments and Settlements in mobile context has different requirements and follows different trends than legacy payment infrastructure

# Bank are supplier and a direct provider for / of mobile business



H-2-H

dbAPI

```
<?xml version="1.0" encoding="UTF-8"?>
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    <PmtTpInf>
```

- Online Banking as well as mobile apps for retail banking
- Real-time payment methods including real-time balance view
- Integration of other banking products
- ...

- Technical interfaces for integration into corporate systems
- Batch and real-time interfaces
- Payment service provider offerings including card-, merchant- and open banking solutions



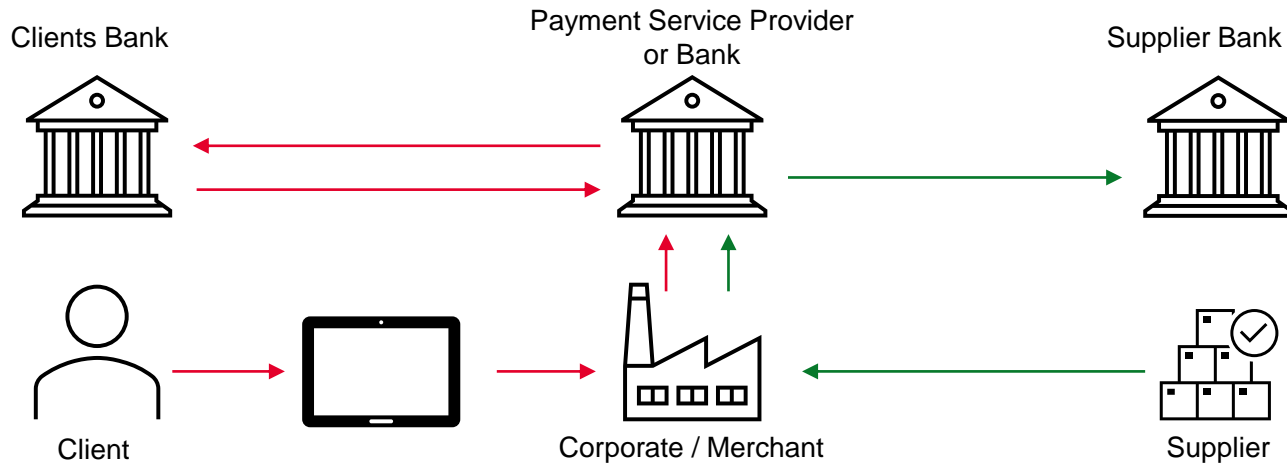
# Requirements on a Corporate Payment System



What could be requirements for corporate payments and the respective processing systems ?

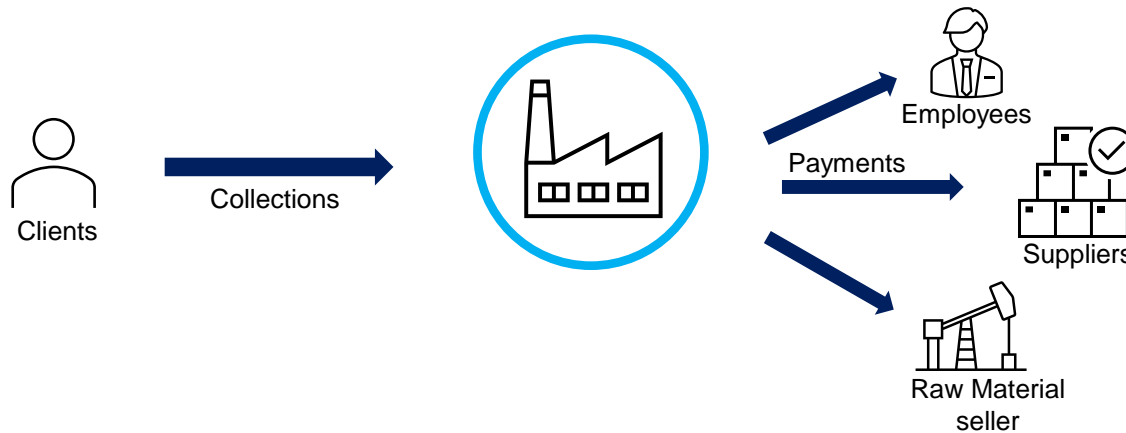
Scalability	Performance	Avoiding unwanted payments	Reporting
Resilience	Cash Demand	Scheme Compatibility	Limits Check
Cyber Security	Convenience	Finality	Technical Interfaces Corporates
Compliance	User friendly	Cost Efficiency	Data Protection

# Where are the critical interfaces for mobile business



- The corporate client interface needs to embed the payment process
- Background typically shielded from clients
- The corporate interface to the payment service provider needs to supply the required information in the correct speed and depth

# Payments and Collections



## Payments

- Company is sending funds to a stakeholder
- Regular or one-time outgoing funds
- Regular receivers or new / occasional senders

## Collections:

- A company is receiving funds from clients
- Regular or one-time incoming funds
- Regular senders or new / occasional senders

# Key Challenges for Corporates while Collecting Money



## Reconciliation

- Connecting payment with a business process
- Identifying clients

## Liquidity flows

- Getting the liquidity where it is needed
- Managing between locations currencies

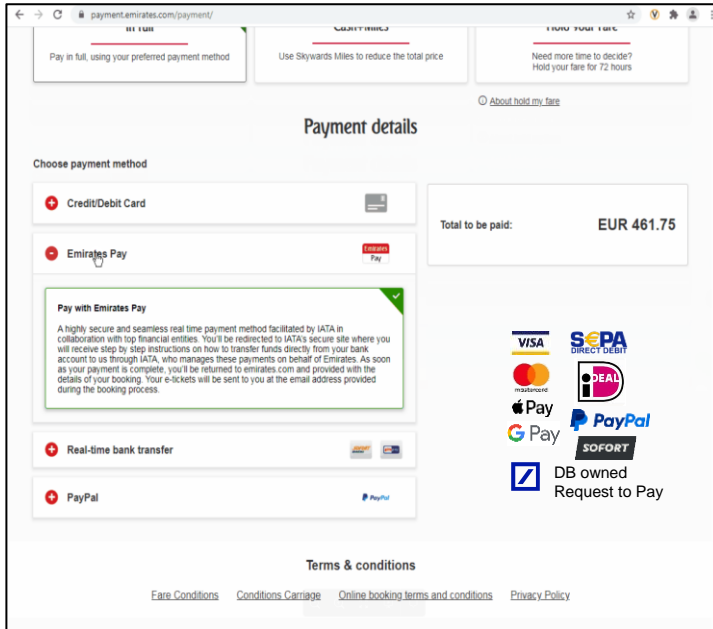
## Notifications / Information

- Receiving information about incoming funds
- Being able to receive and process them

## Managing Risks

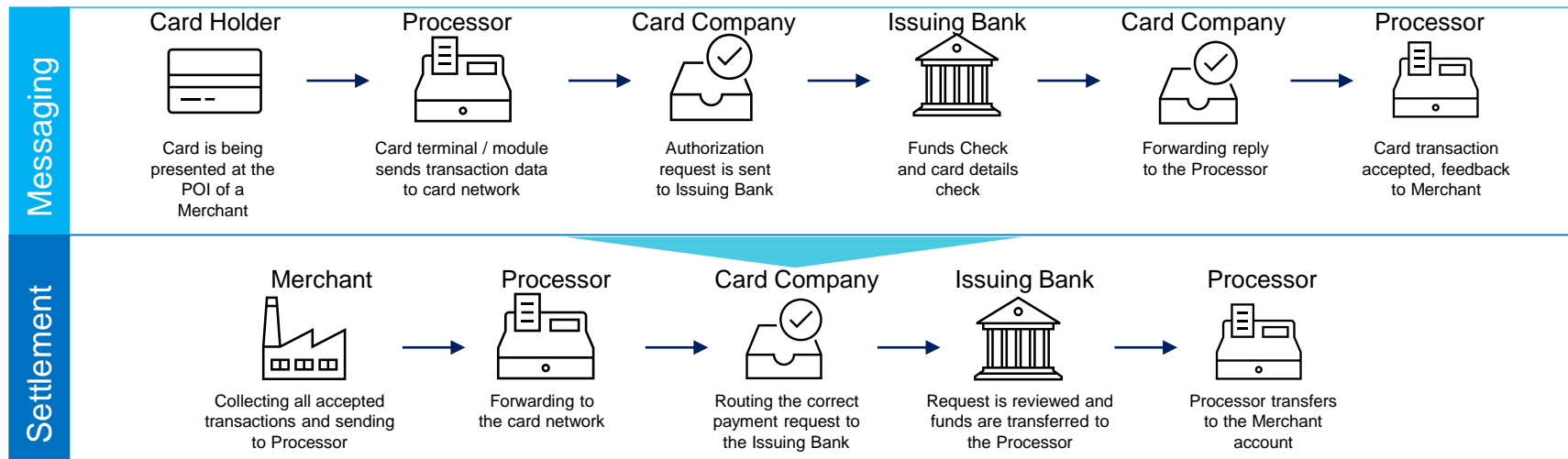
- Currency risks
- Understanding and managing guarantees

# What is a ccheckout module?



- A checkout module contains the functionality that required to create an order
- It captures the shipping address, shipping method, and billing information.
- Technical interfaces for integration into corporate systems / client interfaces
- Contains various payment options like:
  - Credit Card payments
  - Account based payments
  - Innovative Alternative Payment Methods
  - Value-added services: FX multi-currency pricing, risk and fraud mitigations

# Behind the curtains of credit card payments



- Credit card systems support payment and collection processes by orchestrating a real-time communication flow
- The settlement is a subsequent process
- The timing gap is secured by guarantees between banks, Processors and Merchants

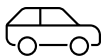
# Payment processing



## ACH Payments



Standard  
Bulk Payments



Same day  
Bulk Payments



Instant  
Payments

Maximum amount	€ 999.999.999,99	€ 999.999.999,99	€ 100.000 (+ Closed User Group)
Booking	Batch Booking	Batch Booking	Itemized payments
Execution time	D+1	Same day	10 seconds
Cut-off	~ 15:30h,	~ 13:00h,	24/7 (z.B. API)

## Wire Payments



- Payment Execution between different countries and different currencies
- FX required
- Transaction processing via the Correspondent banking network
- Monitoring and feedback on transaction processing progress



Depending on the use-case there are various payments methods available

# Single Payment vs. Bulk processing



Single initiated Payments

- Itemized submission of payment requests
- Typically high demand for real-time feedback
- Prerequisite for real-time payment methods
- Initiation processes on corporate side need to support itemized processing (in particular authorization)

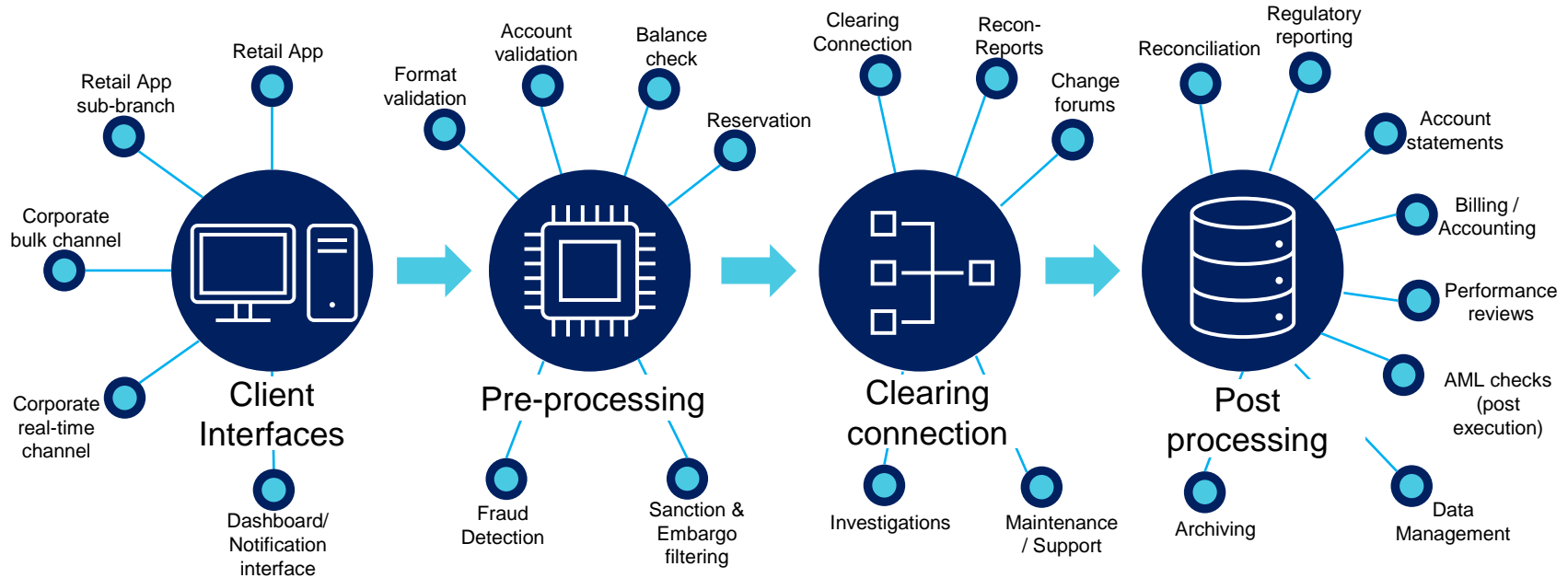


Bulk initiated Payments

- Traditionally corporates send payment initiation request in large batch files
- Prior to submission manual releases/approvals are common
- Batch processing always contains delays in the processing both in the Corporate as well as in the Bank



# Generic Payment Flow in a Bank



How to design a software architecture that fulfills all these requirements ?



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Mehr

Berufserfahrene

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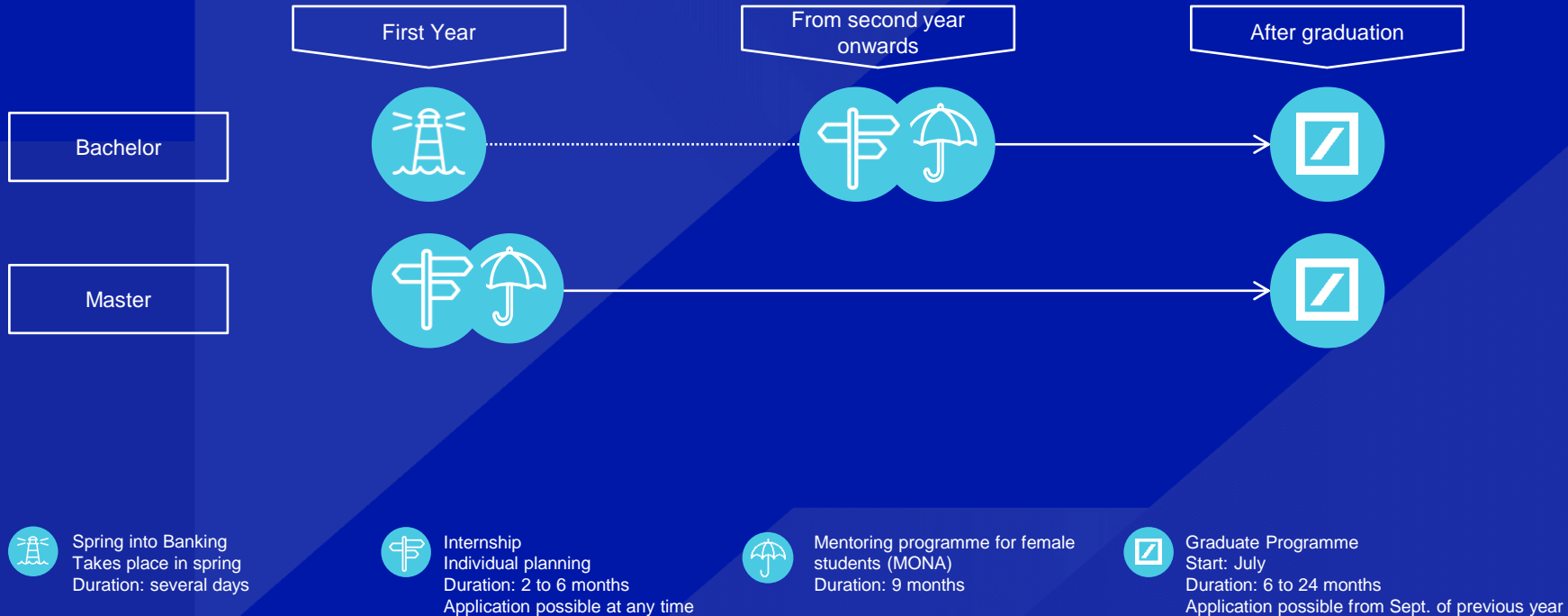
Mehr erfahren

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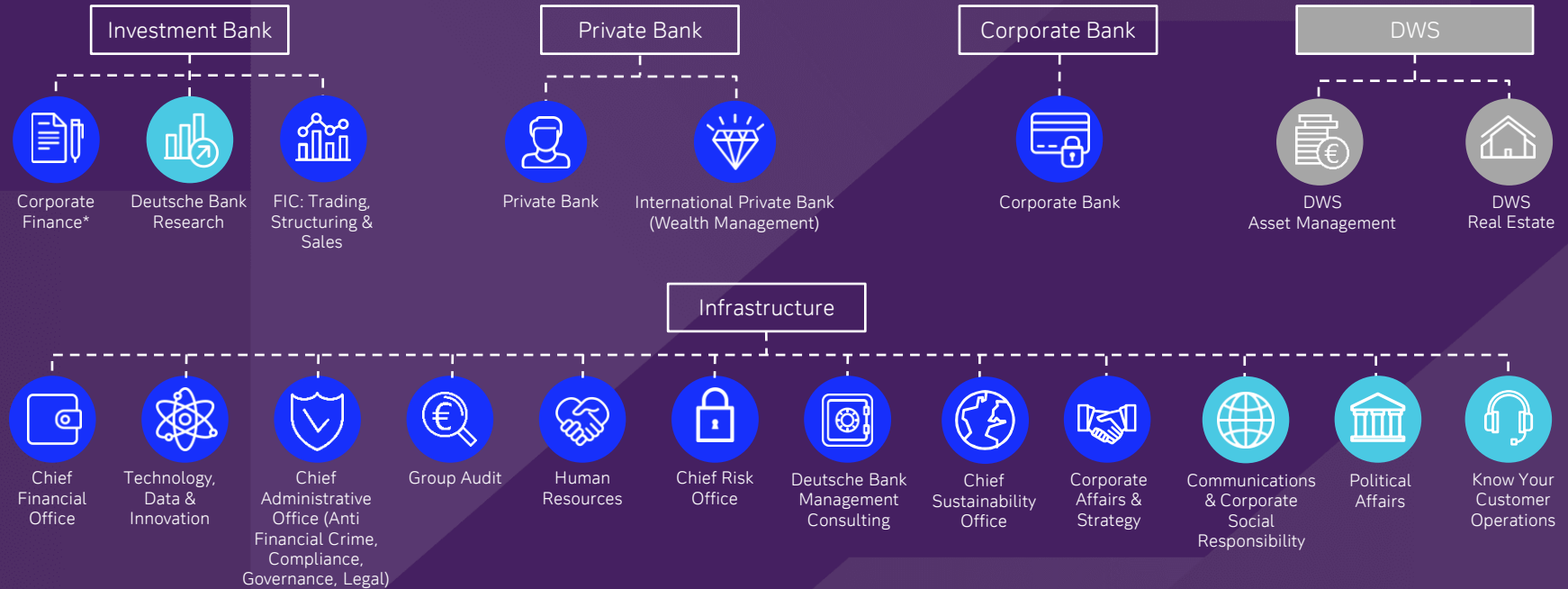
Entdecken Sie Ihre Möglichkeiten

Mehr erfahren

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