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# Business Rules Applications



# Application Examples

- Credit Suisse
- Leading Swiss Bank
- RTC

## Challenges for a Bank

- Globalisation of bank business
- fast reaction on changing environment
- high innovation rate for bank products
- product variety and complexity
- reliability
- regulations

## Where are rules today

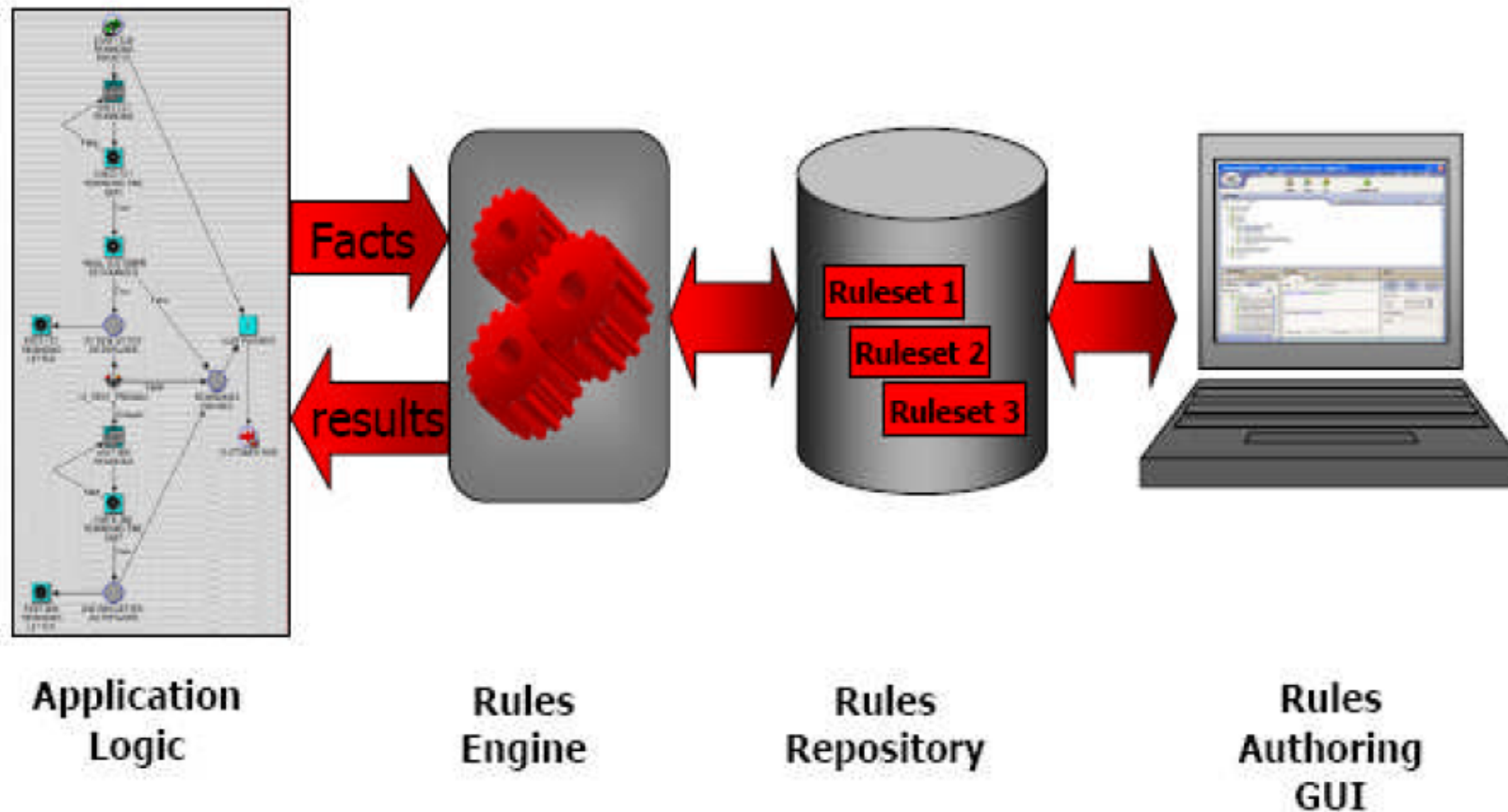
- In head of people
- manuals
- tables (Excel, Word)
- business process description
- IT systems
  - ◆ Credit Suisse
    - 700 application
    - 15 Mio LOC PL/1
    - 10 Mio LOC Java
    - purchased software systems

```
if (S_CD_KUNDENART = '130' & ^SIKAT0077) then  
do ;  
    Error_Code = '1134'; /* KEINE AUTORISATION FUER*/  
end ;                /* MUTATION PERSDATEN */
```

## Difficulties

- Number of rules increases
- ten thousands of rules in code of applications
- identification and modification of rules time-consuming
- new rules → new release of application
  - ◆ but: product development is not synchronized with software release cycles

# Idea: Extract Rules from Applications and store in Business Rules Engine



(Quelle: A. Singer, 2005)

## Application 1: Opening of new Bank Accounts

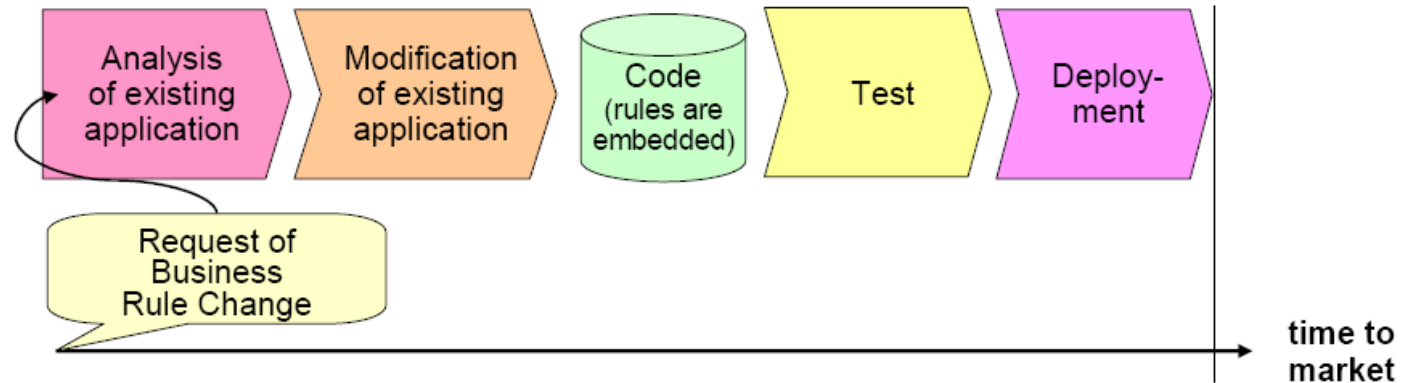
- Existing Application with the following functionality:
  - ◆ Opening bank accounts, customer identification, sales of more than 100 products, controlling of legal aspects, generate and print contracts
- Problem area
  - ◆ > 20'000 rules
  - ◆ redundancy of rules
  - ◆ insufficient comprehensibility and clarity
  - ◆ high maintenance costs
- Solution:
  - ◆ Business Rules Engine
  - ◆ Reengineering of existing application

| Cases   | Einzel firma | AG | GmbH | Kollektiv-<br>Gesellschaften | Kommandit-<br>Gesellschaften | Genossenschaften | Vereine | Trust | Stiftungen | ... |
|---|--------------|----|------|------------------------------|------------------------------|------------------|---------|-------|------------|-----|
| Relationship opening (create)                   |              |    |      |                              |                              |                  |         |       |            |     |
| Relationship enhancement (modify existing data) |              |    |      |                              |                              |                  |         |       |            |     |
| Product 1                                       |              |    |      |                              |                              |                  |         |       |            |     |
| Product 2                                       |              |    |      |                              |                              |                  |         |       |            |     |
| Product n                                       |              |    |      |                              |                              |                  |         |       |            |     |

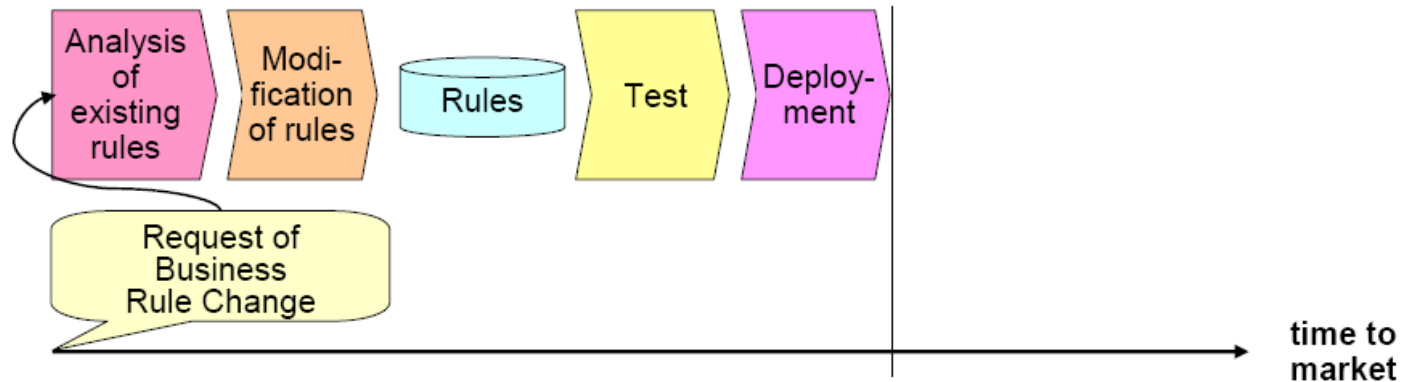
# Business Rules and Software Validation

Assumption: An existing BR has to be changed

## Option 1: Rules are embedded in application software



## Option 2: Rules are managed and executed via a BRE (code remains unchanged)





## Finding

- Business Rules work – even with thousands of rules
- Combination of rule builder and rule engines works
- BRE required re-engineering of existing rules
- building up vocabulary in the beginning was important
- new role distribution between IT und business
  - ◆ more tasks for business (e.g. testing and changing rules)
- iterative development more important than in other projects
- testing and deployment require adequate processes (who makes tests, what has to be tested, ...)?
- validation of rules by business
- tracing rule changes is important

# Pricing of financial products

- New pricing models
  - ◆ service bundling
  - ◆ cross selling
- customer-specific fees
- influence customer behaviour
- central pricing and billing

## Task

- Maestro and customer cards
  - ◆ simple fee models
  - ◆ different types of customers (private, company, ...)
  - ◆ periodical and ad-hoc fees
- keeping customer accounts
  - ◆ complex fee structure
  - ◆ retail and private bank customers
  - ◆ individual special conditions

## Result

### ■ Maestro and customer cards

- ◆ 12-15 rules
  - 1 decision table
  - 5 extra rules
- ◆ Test with 400 transactions: 100% correct

### ■ keeping customer accounts

- ◆ 70-80 rules
  - 20 for retail customers, 20 for private banking customers
  - 40 for special conditions
- ◆ Test with calculations: 3 deviations >1 Rappen

# Result

|  |                              |
|--|------------------------------|
| <b>Für</b><br>Depotführungsanfrage : AK/PK Kunde   |                              |
| <b>Berechne</b><br>: Depotverwahrungsgebühr = <b>Depotwert</b> * Ansatz Depotverwahrung für Depotwert / : 12 |                              |
| Fremdverwahrungsgebühr<br>Nicht bewertete Positionen<br>Depotverwahrungsgebühr                               | 126.40<br>0.00<br>713'937.84 |
| <b>Bruttopreis</b>   | <b>714'064.24</b>            |
| Kassenobligationen   | 0.00                         |
| Anteil Diverse   | 0.00                         |
| Fonds  | 0.00                         |
| Anlagestrategien   | 0.00                         |
| Anlagestiftungen PK  | 131'476.32                   |
| Aktien   | 0.00                         |
| <b>Bonus Total</b>   | <b>131'476.32</b>            |
| <b>Basispreis</b>  | <b>582'587.93</b>            |
| Kundendiscount   | 0.00                         |
| <b>Total Rabatt</b>  | <b>0.00</b>                  |
| <b>Nettopreis</b>  | <b>582'587.93</b>            |
| Sonderaufwand  | 0.00                         |
| Positionen über Freigrenze   | 0.00                         |
| Nutzniesung  | 0.00                         |
| Einzelverwahrung   | 0.00                         |
| CQUE   | 0.00                         |
| <b>Total Zuschlag</b>  | <b>0.00</b>                  |
| <b>Totalpreis vor MwSt</b>   | <b>582'587.93</b>            |
| Nach AK/PK 07 Flat Fee auf dem Total in % des Depotwertes  |                              |
|  | 190'383.42                   |

Price Rule

Price Model

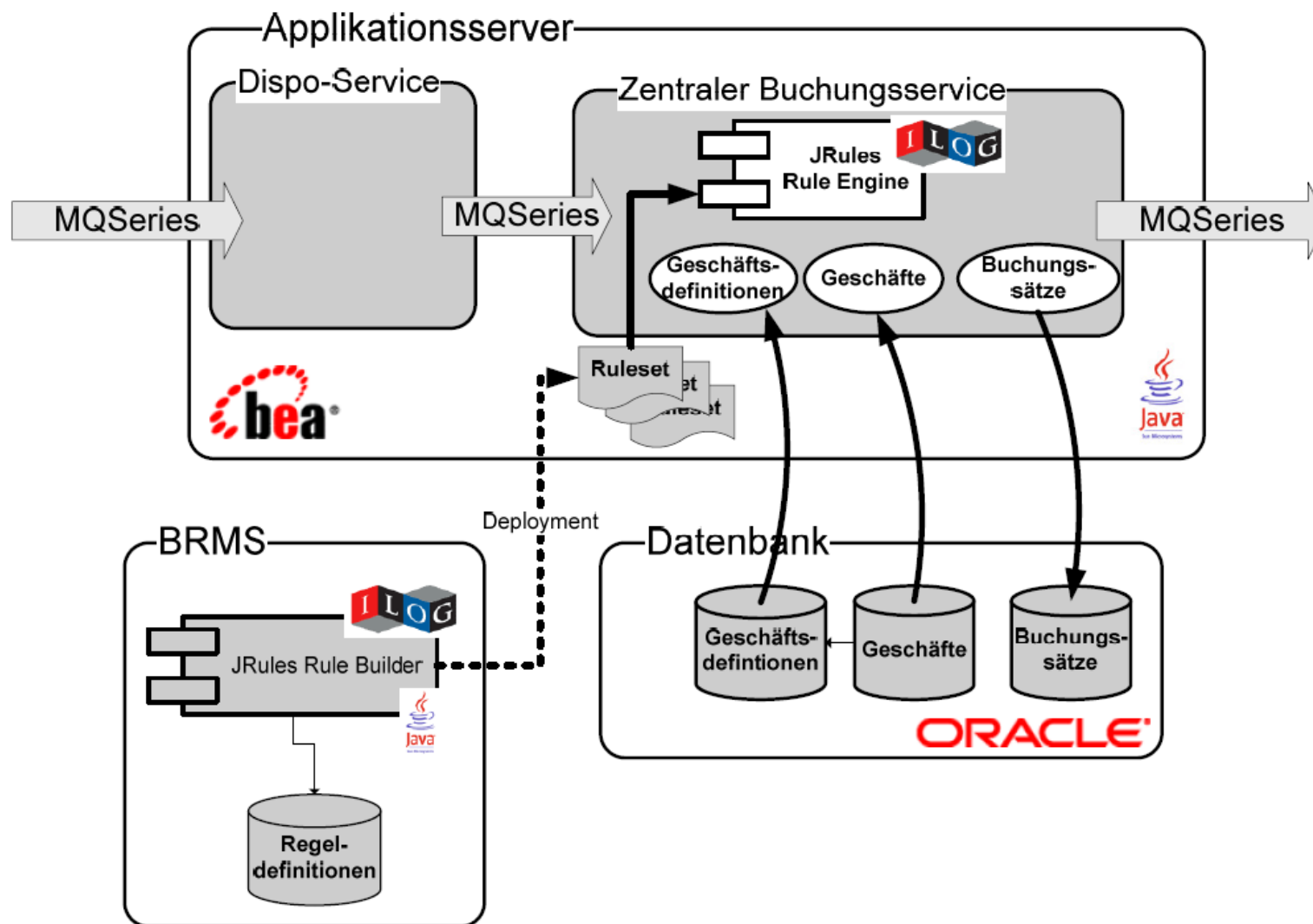
Special Condition



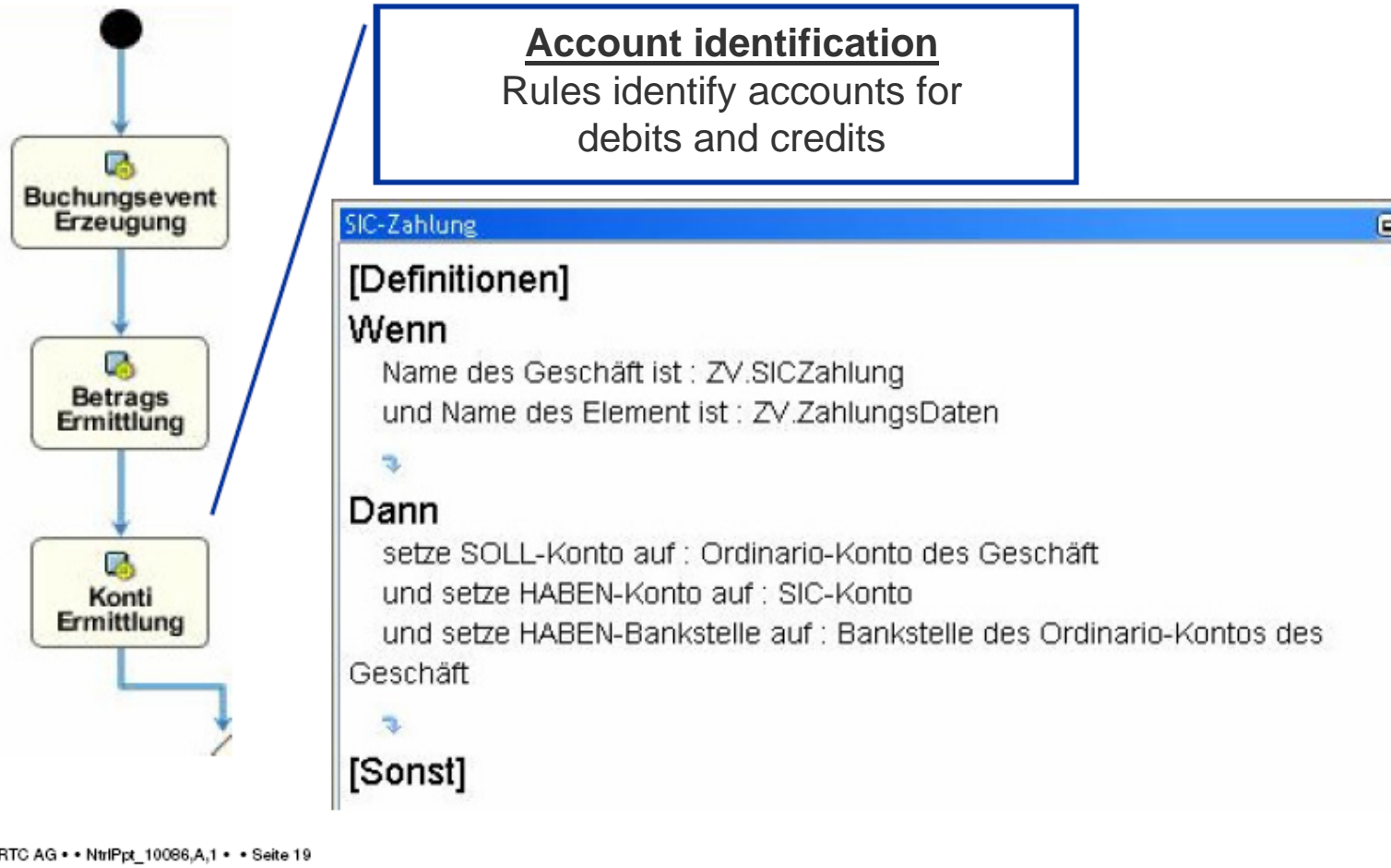
# Universal Banking Software IBIS

- 3.4 mio accounts and depots
- 254 mio bookings per year (about 1 mio per day)

# Central Accounting System



# Rules and Processes





## Some Experiences

- During development
  - ◆ high requirements for people
  - ◆ multiple iterations necessary
  - ◆ default rules (rules for every case)
- Performance
  - ◆ Key is efficient data access
- Test
  - ◆ optimal comparability of specification and implementation
- Rule identification was time-consuming and error-prone