An Overview of CoCoME

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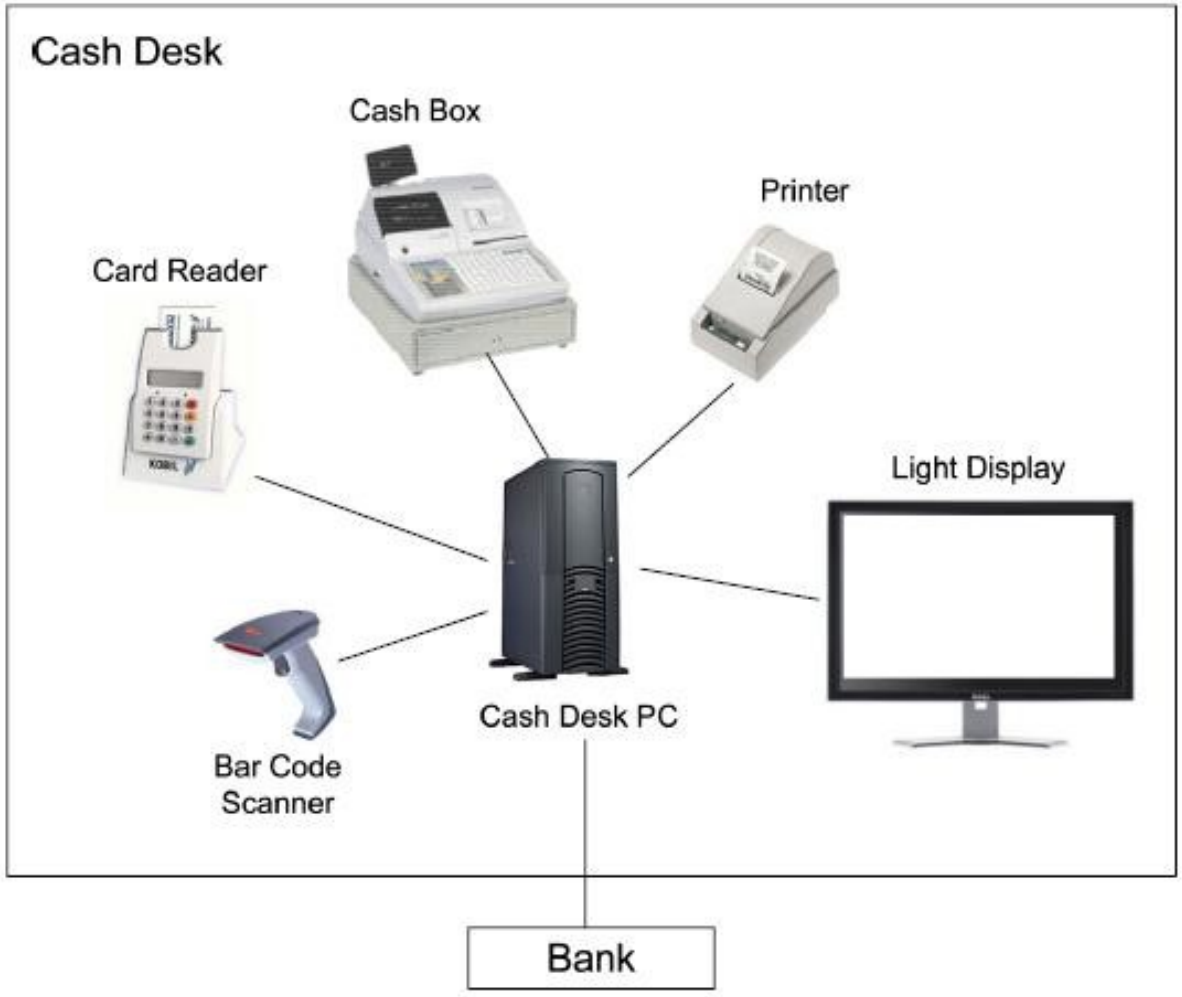
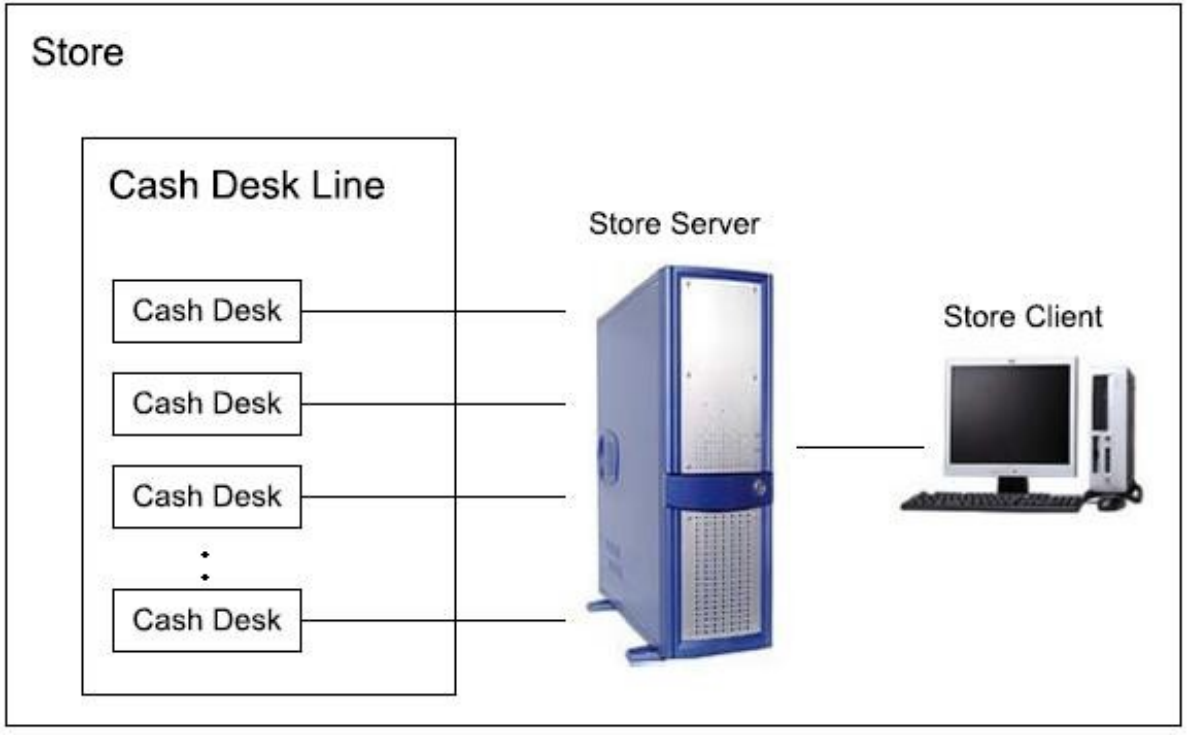
CoCoME: Common Component Modeling Example

- Context = Trading System
- Supports functional aspects : Manage sales, order products, .. etc.
- Supports non function aspects : Manage Express Checkout, Synchronization, RealTime Constraints ... etc.
- Extra-functional properties based on statistics for typical German super-markets

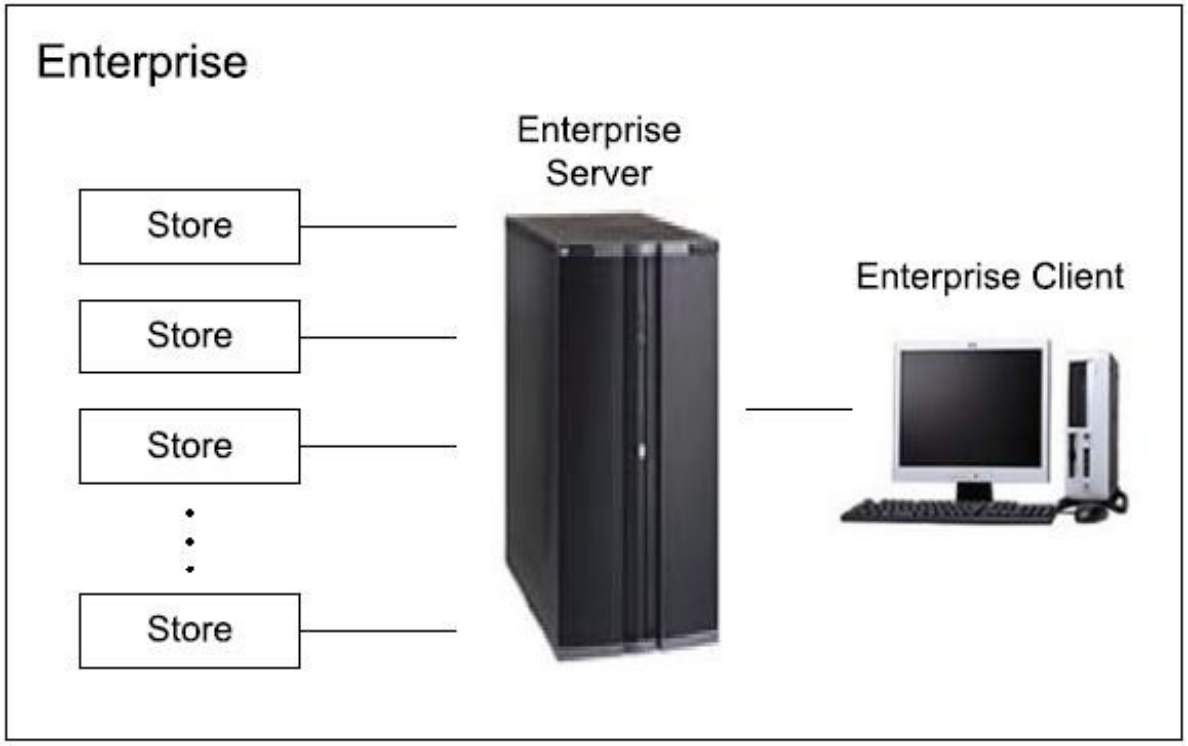
CoCoME: A Single Cash Desk



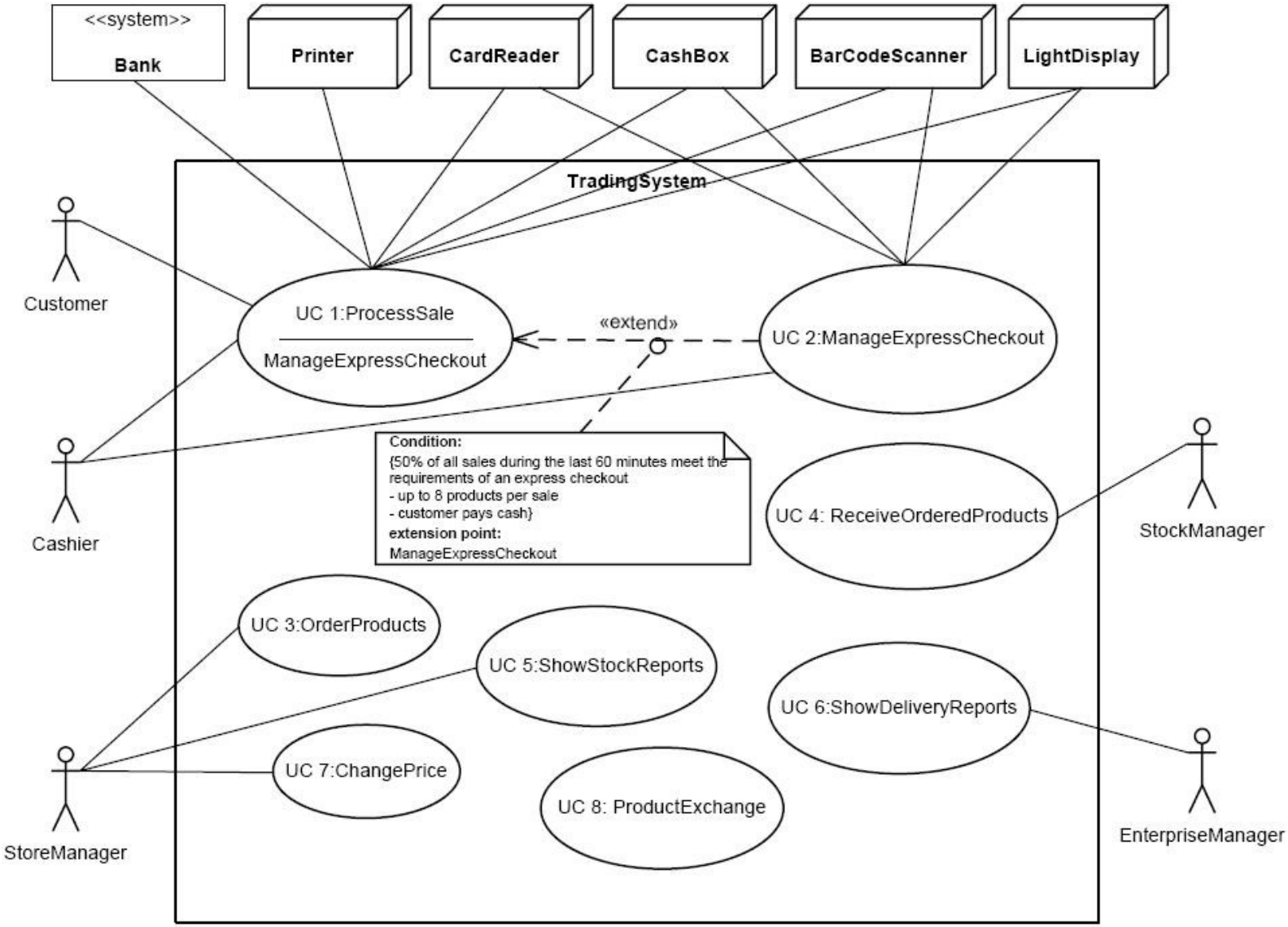
CoCoME: A single Store



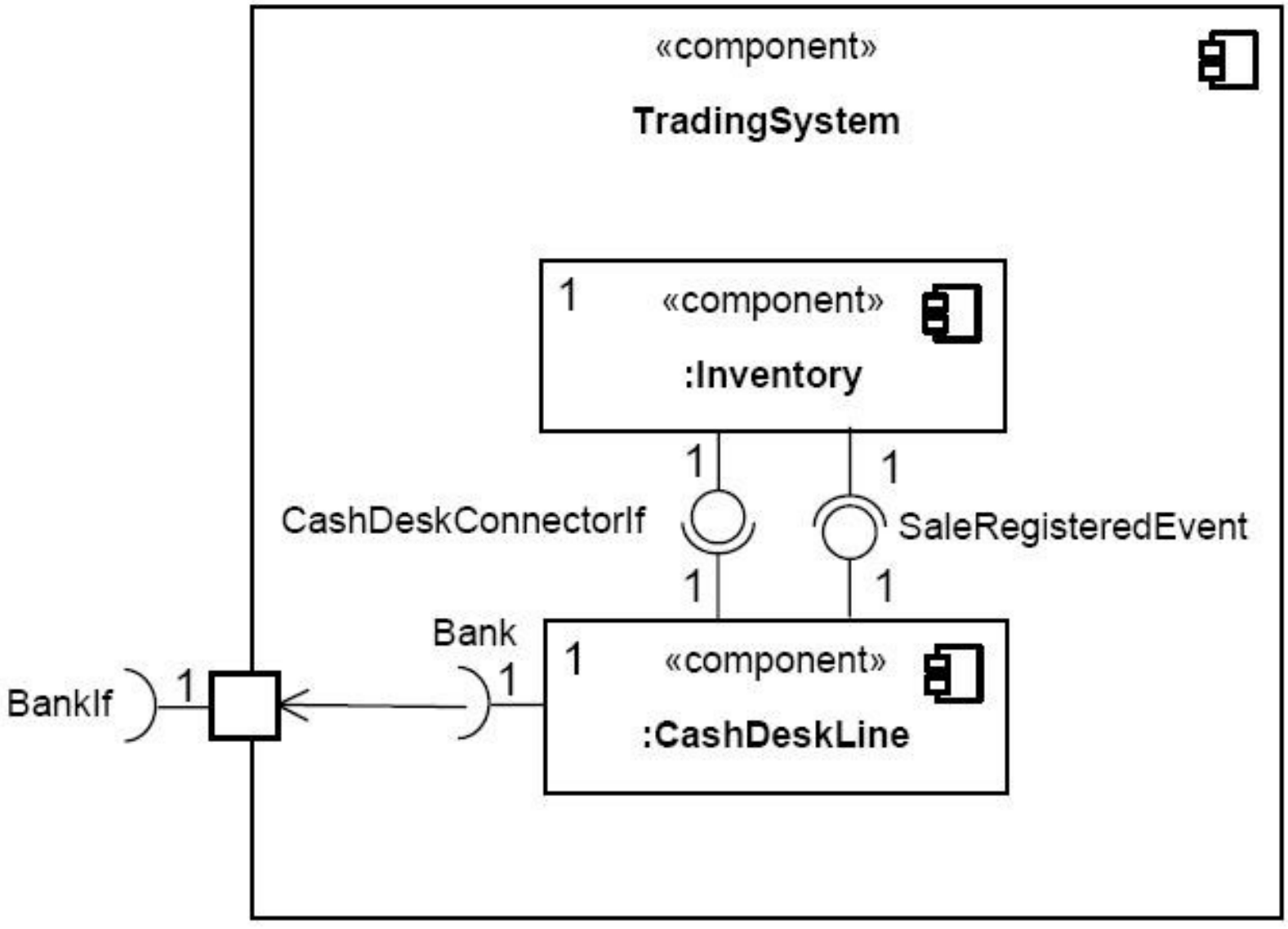
CoCoME: An Entreprise



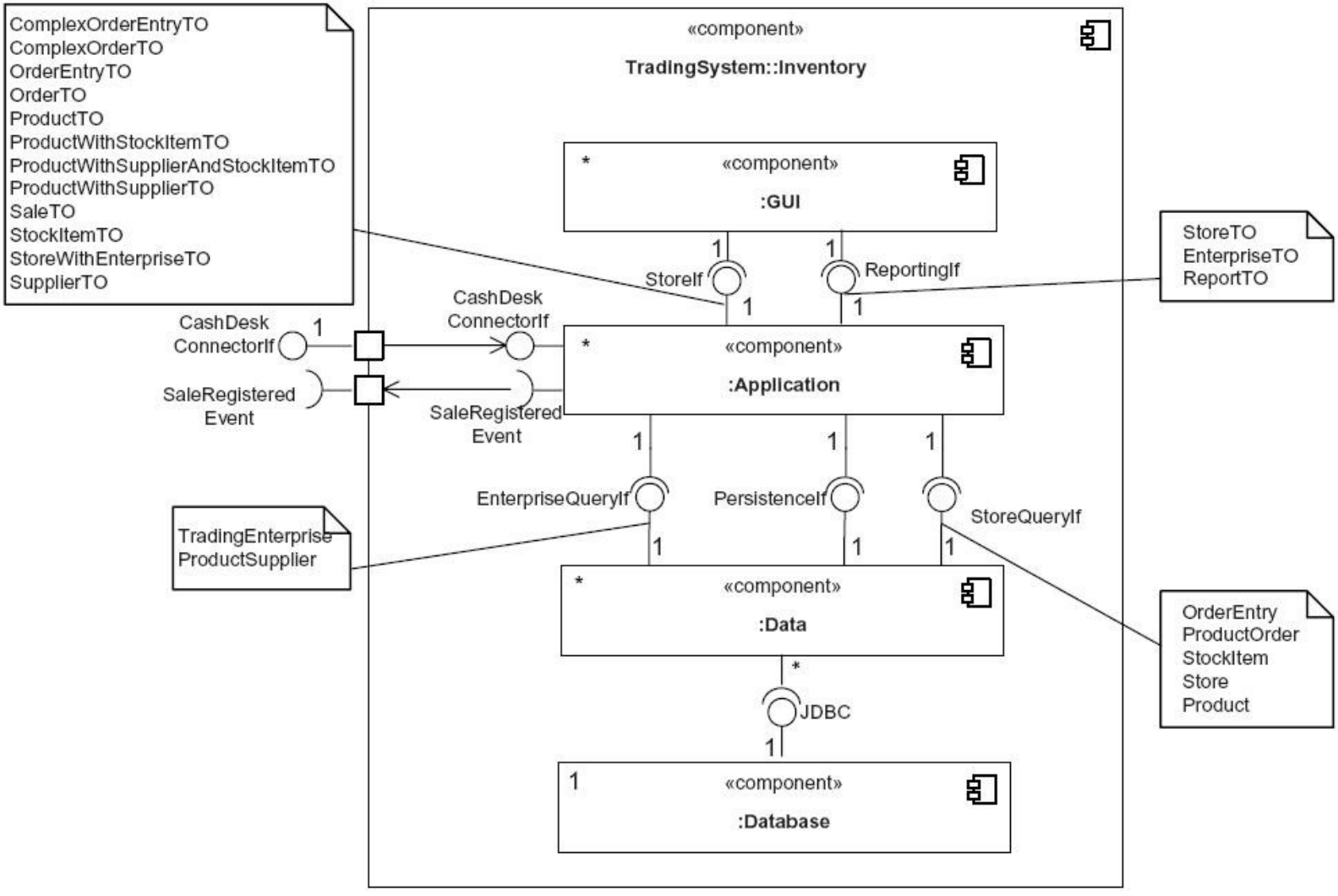
CoCoME: Provided Use Cases



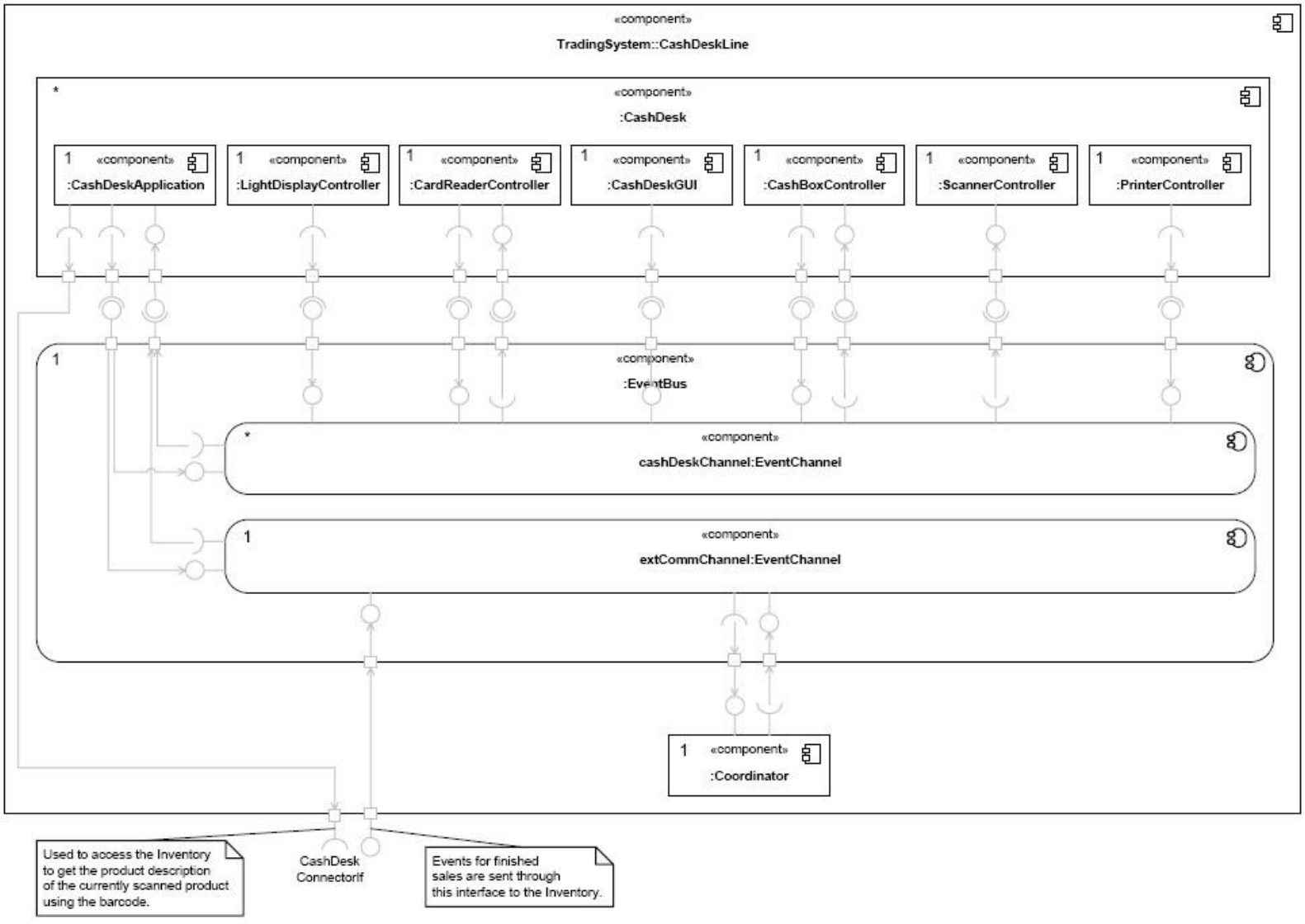
CoCoME: Component Modularization - TradingSystem



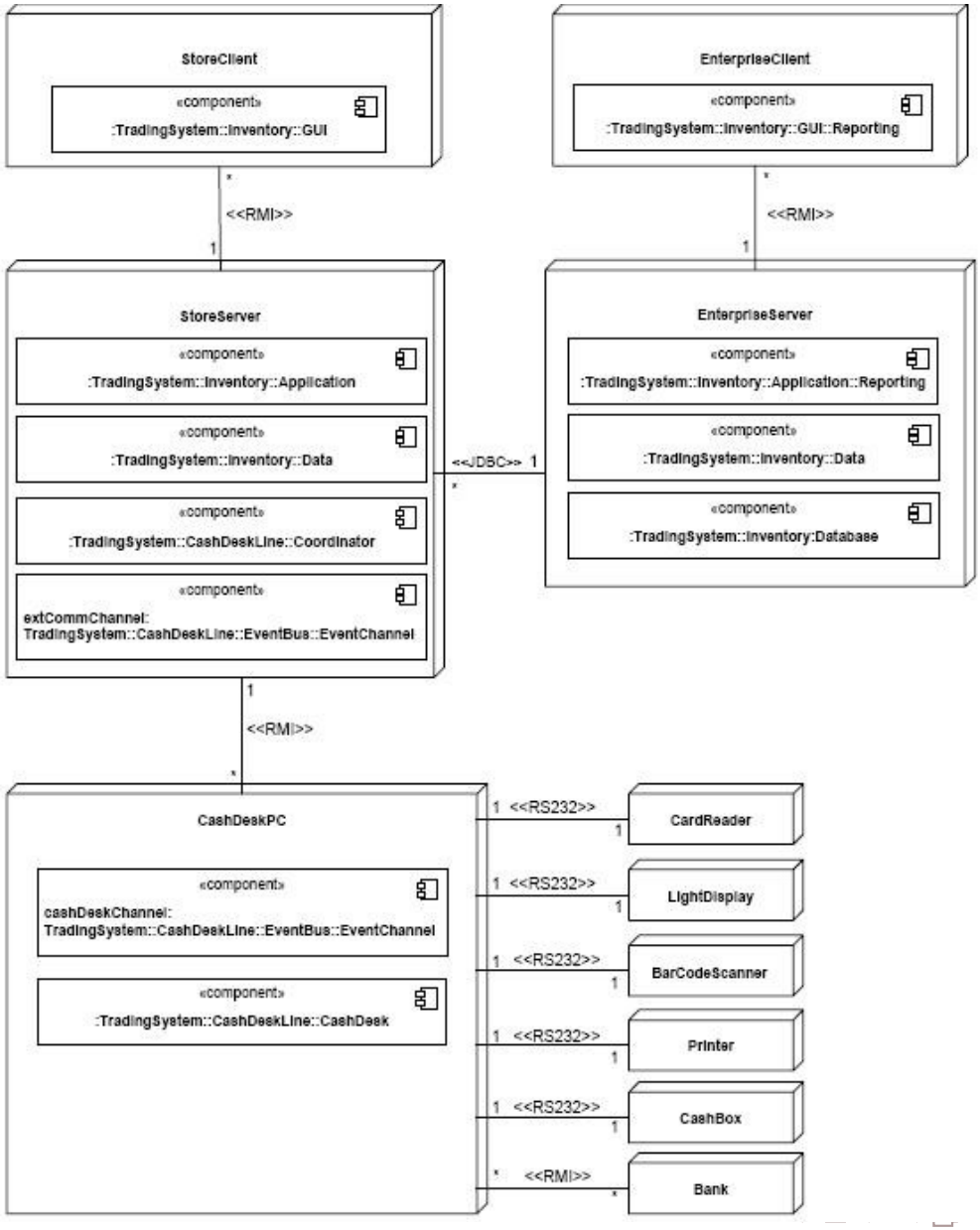
CoCoME: Component Modularization - Inventory



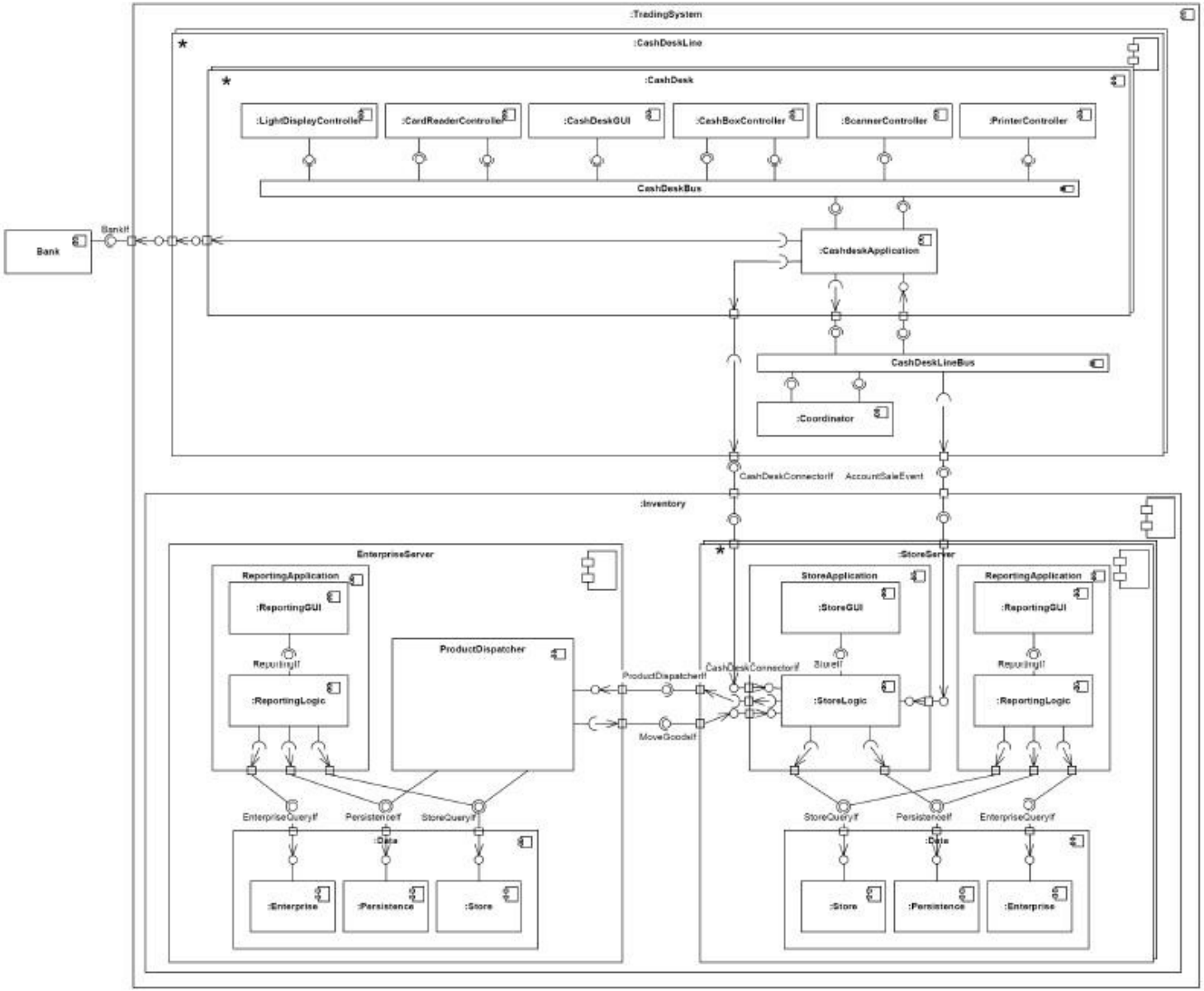
CoCoME: Component Modularization - CashDeskLine



CoCoME: Component Modularization - Deployment System



CoCoME in Fractal : Structural View



CoCoME in Fractal : Behavioral View

1. A frame protocol is associated to each component
2. Frame protocol language used by FractalBPC :

$$
\begin{array}{rcl}
P & ::= & !I.M\uparrow \\
 & | & ?I.M\downarrow \\
 & | & !I.M\downarrow \\
 & | & ?I.M\uparrow \\
 & | & ?I.M\{P\} \\
 & | & !I.M\{P\} \\
 & | & P+ \\
 & | & P* \\
 & | & P_1|P_2 \\
 & | & P_1;P_2
\end{array}
$$

CoCoME in Fractal : Behavioral View

```
# INITIALISED
(
  ?CashDeskApplicationHandler.onSaleStarted
);

# SALE_STARTED
(
  ?CashDeskApplicationHandler.onProductBarcodeScanned{
      !CashDeskConnector.getProductWithStockItem;
      !CashDeskApplicationDispatcher.sendProductBarcodeNotValid+
      !CashDeskApplicationDispatcher.sendRunningTotalChanged
  }
)*; # <--- LOOP

?CashDeskApplicationHandler.onSaleFinished;

# SALE_FINISHED
(
  ?CashDeskApplicationHandler.onPaymentMode
);

# PAYING_BY_CASH
(
  (
    (
      ?CashDeskApplicationHandler.onCashAmountEntered
    )*;
```

CoCoME in Fractal : Behavioral View

```
        # On Enter
        ?CashDeskApplicationHandler.onCashAmountCompleted{
          !CashDeskApplicationDispatcher.sendChangeAmountCalculated
        };

        ?CashDeskApplicationHandler.onCashBoxClosed{
          !CashDeskApplicationDispatcher.sendSaleSuccess;
          !CDLEventDispatcher.sendAccountSale;
          !CDLEventDispatcher.sendSaleRegistered
        }
      )
    )

)* | (
    # Enable Express Mode
    ?CDLEventHandler.onExpressModeEnabled{
      !CashDeskApplicationDispatcher.sendExpressModeEnabled
    }
)* | (
    # Disable Express Mode
    ?CashDeskApplicationHandler.onExpressModeDisabled
)*
```

CoCoME in Fractal : Deployment View

1. FractalRMI are used rather than Sun RMI
2. JMS are not used for implementing buses, they are replaced by components routing messages
3. Deployment is described using FractalADL and implemented using FractalRMI

CoCoME in Fractal : Implementation View

1. The architecture is modeled using FractalGUI
2. The resulting model is extended by hand to integrate behavior protocols
3. A tool is used to get the skeleton of the appliaction
4. The code of the CoCoME implementation is adapted and insered to the corresponding components

CoCoME in Fractal : Testing process

- FracalBPC is used to check components communicates behaviors
  1. The GUI components are not considered for testing
  2. Extra-functional proprieties are independently tested from the functionality testing
  3. The trading system is automatically lunched.

CoCoME in Fractal : Testing Results