mySAP-Banking
Basel II - Solution

PRMIA

Moscow, 5 September 2002

Michael Strauß, SAP Germany

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Market Situation Basel II

Basel II Credit Risk: Business Needs and the SAP Solution

Basel II Credit Risk: Building Blocks in Detail

Enterprise Management Architecture and Basel II

Summary

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Summary

SAP in the Banking Industry

Early 80's: First Banking customers

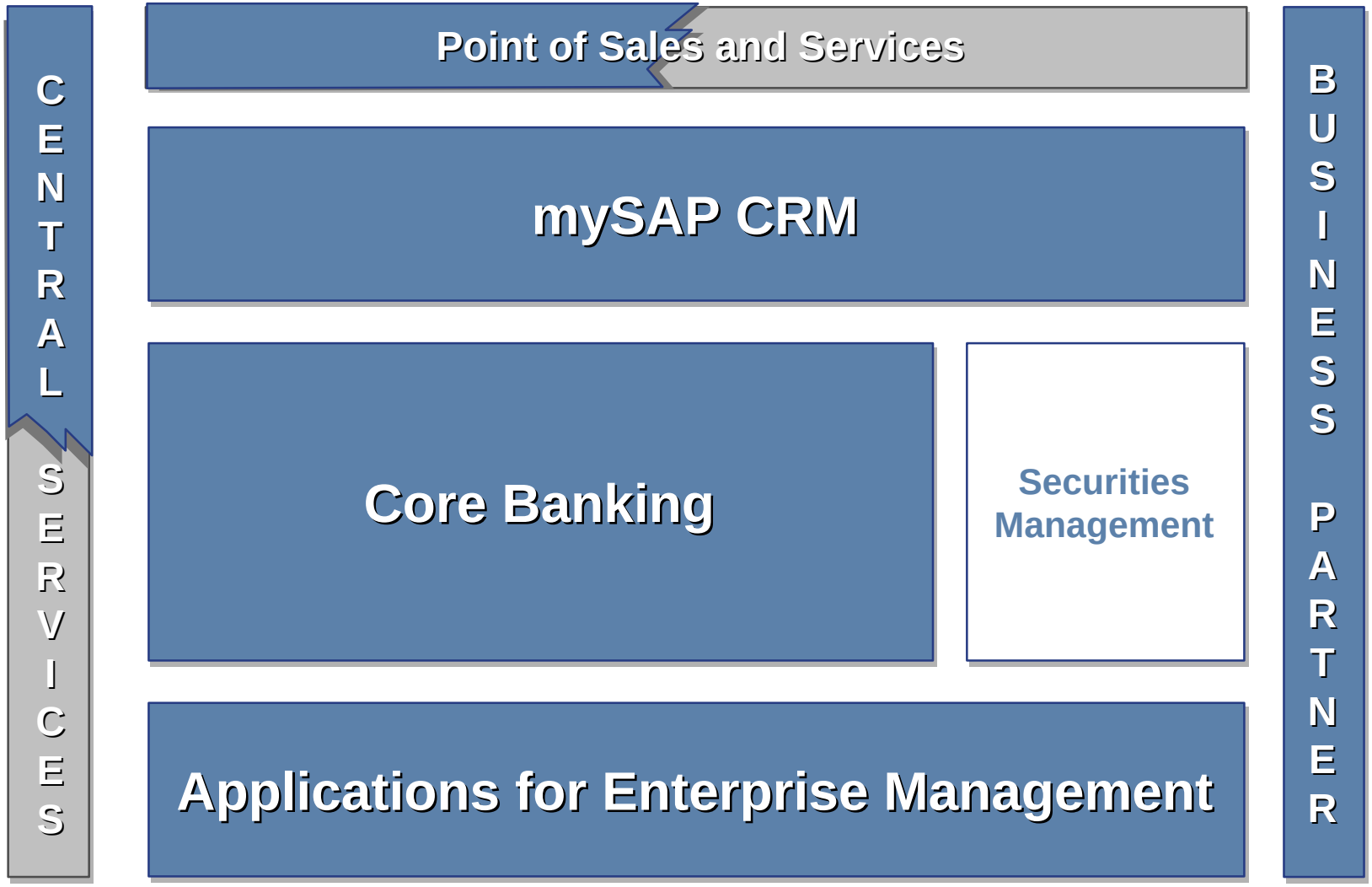
Early 90's: First Corebanking customers

1995: First Risk Management customers

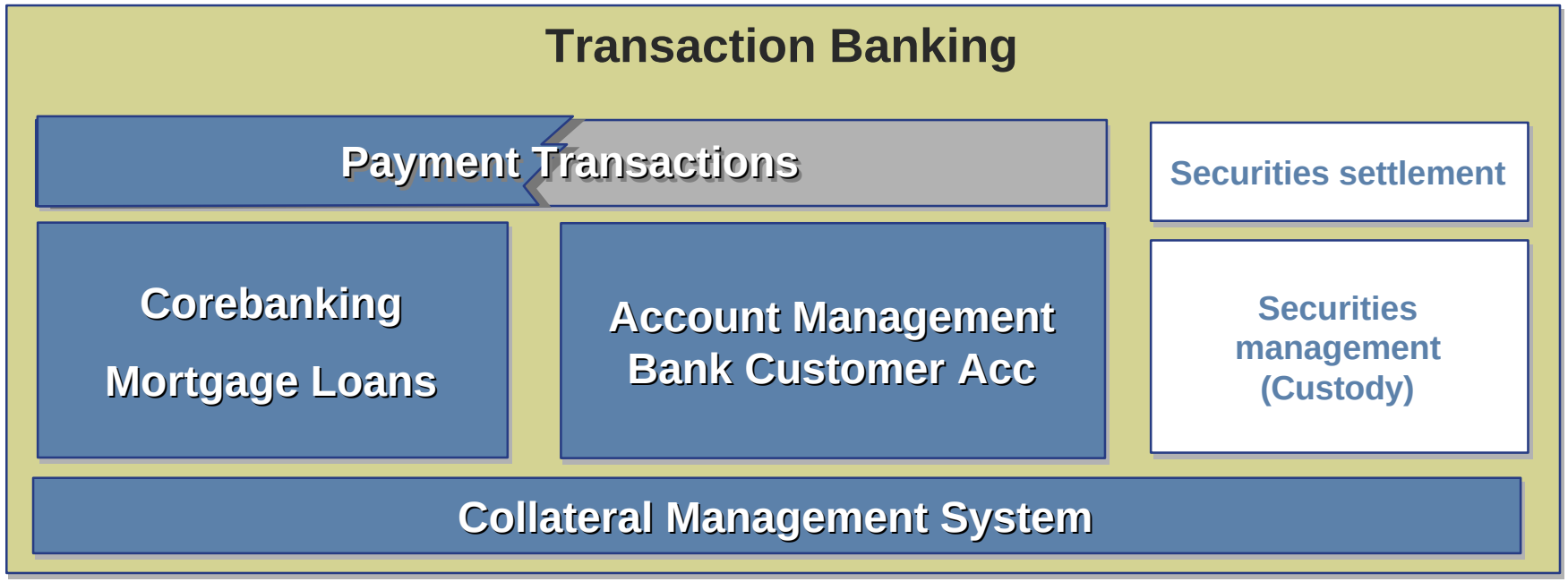
Today:

- Proven Solutions for CRM, Corebanking, Enterprise Management and Business Support
- More than 350 customers in 56 countries
- IBU Financial Services is the largest industry-specific development department in SAP

Target Landscape and SAP Focus



SAP Core Banking

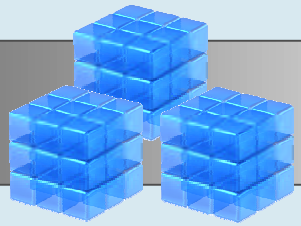


SAP Enterprise Management Solutions

Planning and Simulation

Business Consolidation

Corporate Performance Monitor



Reporting with SAP BW

FI, CO

IAS

Basel II

Profit Analyzer

Risk Analyzer

ALM

Limit Manager

350 customers in 56 countries

Deutsche Bank

BARCLAYS

- 25 of world's top 50 banks
- 30 largest German banks
- 10 largest Swiss banks
- 3 of the 4 largest UK banks

HypoVereinsbank

ABN·AMRO

BANK ONE

Zürcher Kantonalbank

Nordea

National
TAILORED FINANCIAL SOLUTIONS

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Analyst Statement

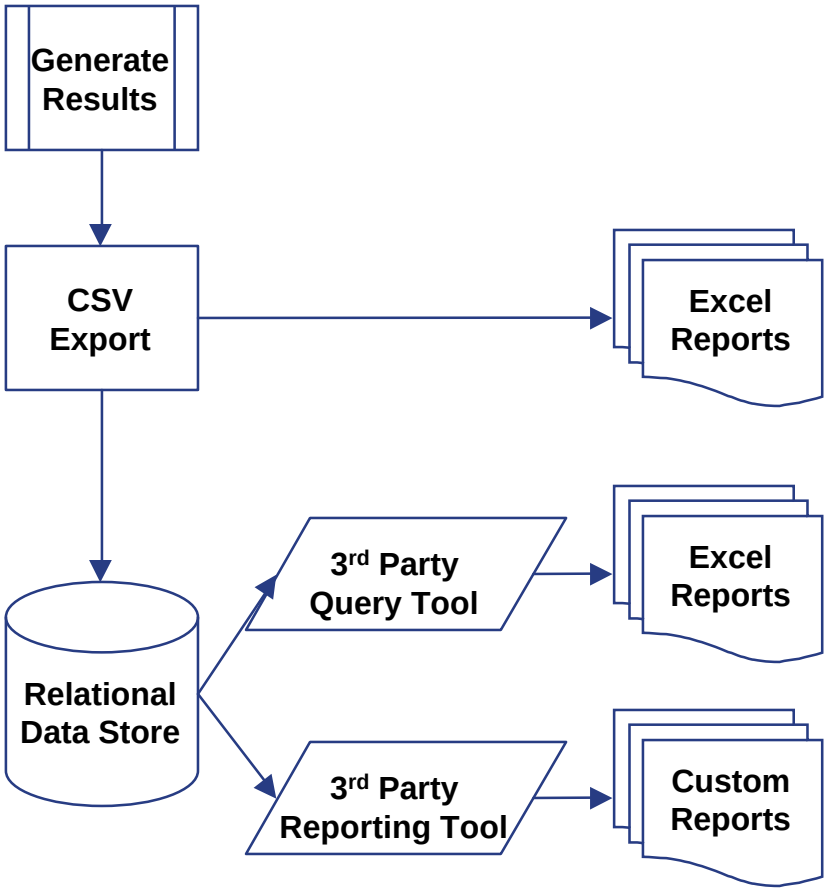
„We expect that it will be mid 2003 before the first of the actual regulatory requirements can be issued. Many institutions are thinking that two and a half years (between mid 2003 and yearend 2006) sounds like ample time to implement any required technologies. *We believe they are wrong.*"

"… even if institutions were to begin defining their internal architectures and designing the internal systems required for compliance today, there is barely enough time to implement a system on the scale that will likely be required."

Meridien Research: Ecomomic and Regulatory Capital Converge: Risk Systems Challenged; Volume 6, Number 2; April 8, 2002

Market Situation: Regulatory Reporting Today

Typical Regulatory Reporting Architecture



Source: Meridien Research

Regulatory Reporting has three major components

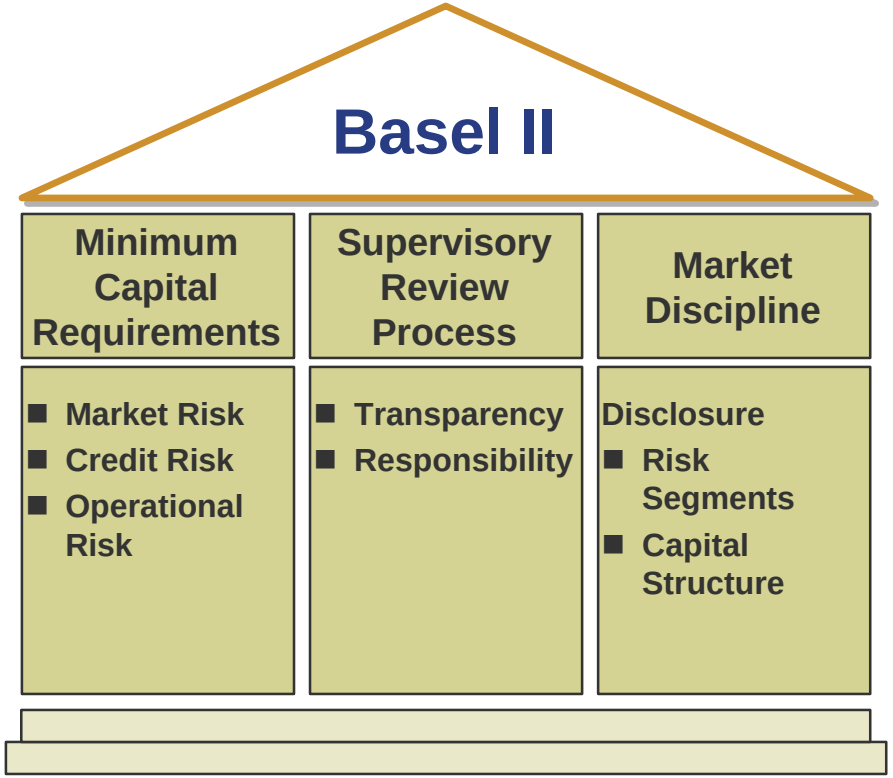
- Data aggregation tools,
- Calculators,
- Report formatting and output.

Today banks show a conglomerate of systems

- 3rd party vendor and inhouse development
- Manual intervention
- Time-consuming and costly maintenance

No integration / stand-alone infrastructure

Market Situation: New Risk Architecture required



New regulatory capital requirements for all (regulated) banks scheduled for 1.1.2006

Need for a new risk architecture

- Calculations are quite sophisticated – and there is no existing system that can fit the bill.
- Potential reduction in capital motivates banks to create not just systems to support the calculation, but also those required for the testing and backup of internal models.

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Business Needs – just to mention a few...

1. Integrated credit architecture
2. Timing
3. Handling of „moving target“ Basel II
4. Efficient resource management

Business Need: Integrated Credit Architecture

Basel II – Credit Risk
IRB Minimum Requirements

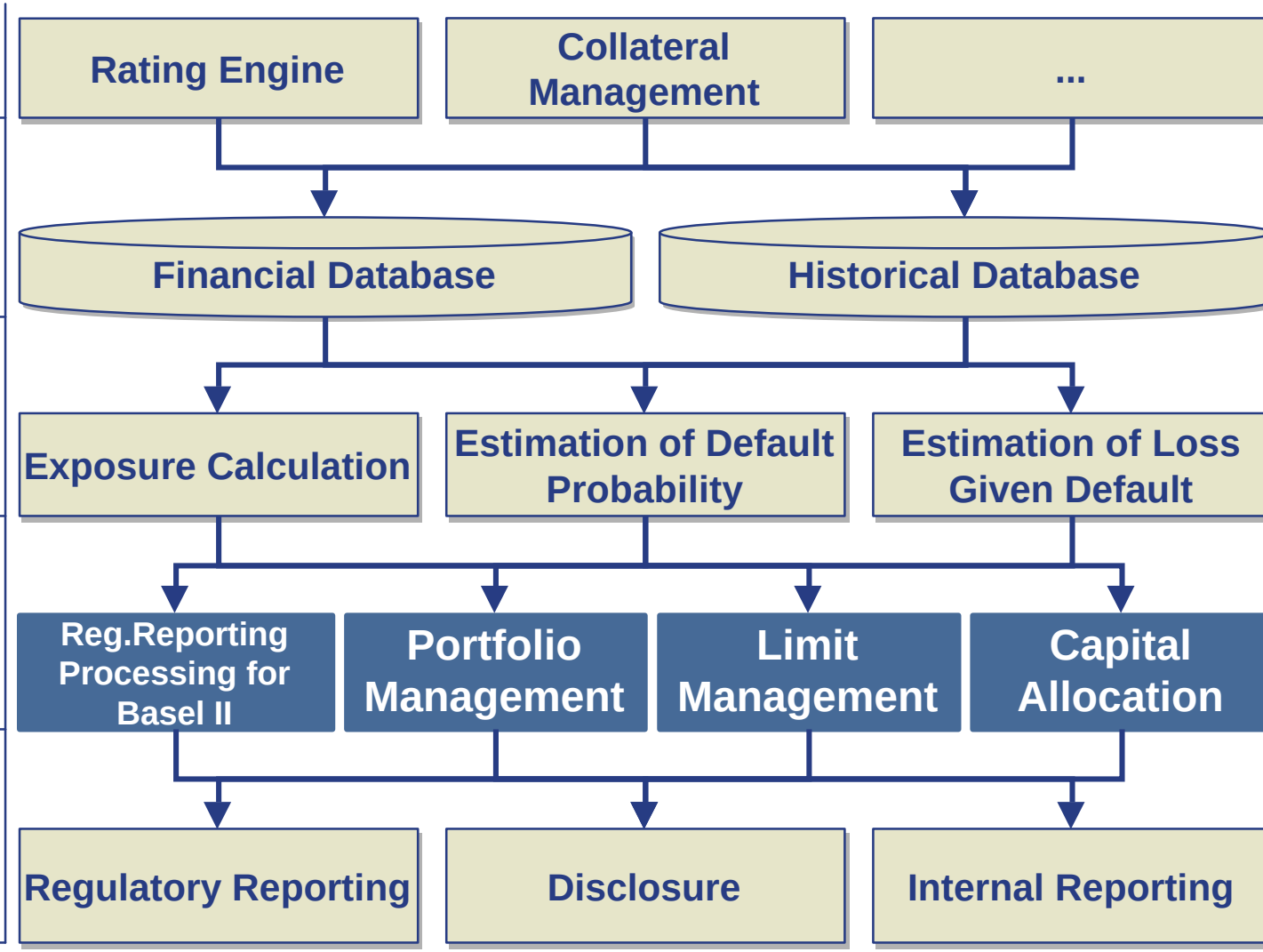
1. Meaningful differentiation of credit risk
2. Completness and integrity of rating assignment
3. Oversight of the rating system and process
4. Criteria of rating system
5. Estimation of probability of default
6. Data collection and IT systems
7. Use of internal ratings
8. Internal validation
9. Disclosure

Source: Bank of International Settlements

High architectural impact of the latter 5 requirements.
Key elements:

- Financial database for transactions, collateral, ratings and other input information
- Historical database and analytical tool for determination and testing of credit risk parameters
- Exposure calculation engine
- Capital allocation infrastructure
- Regulatory reporting and disclosure
- Rating engine
- Collateral management system

Architectural building blocks impacted by Basel II

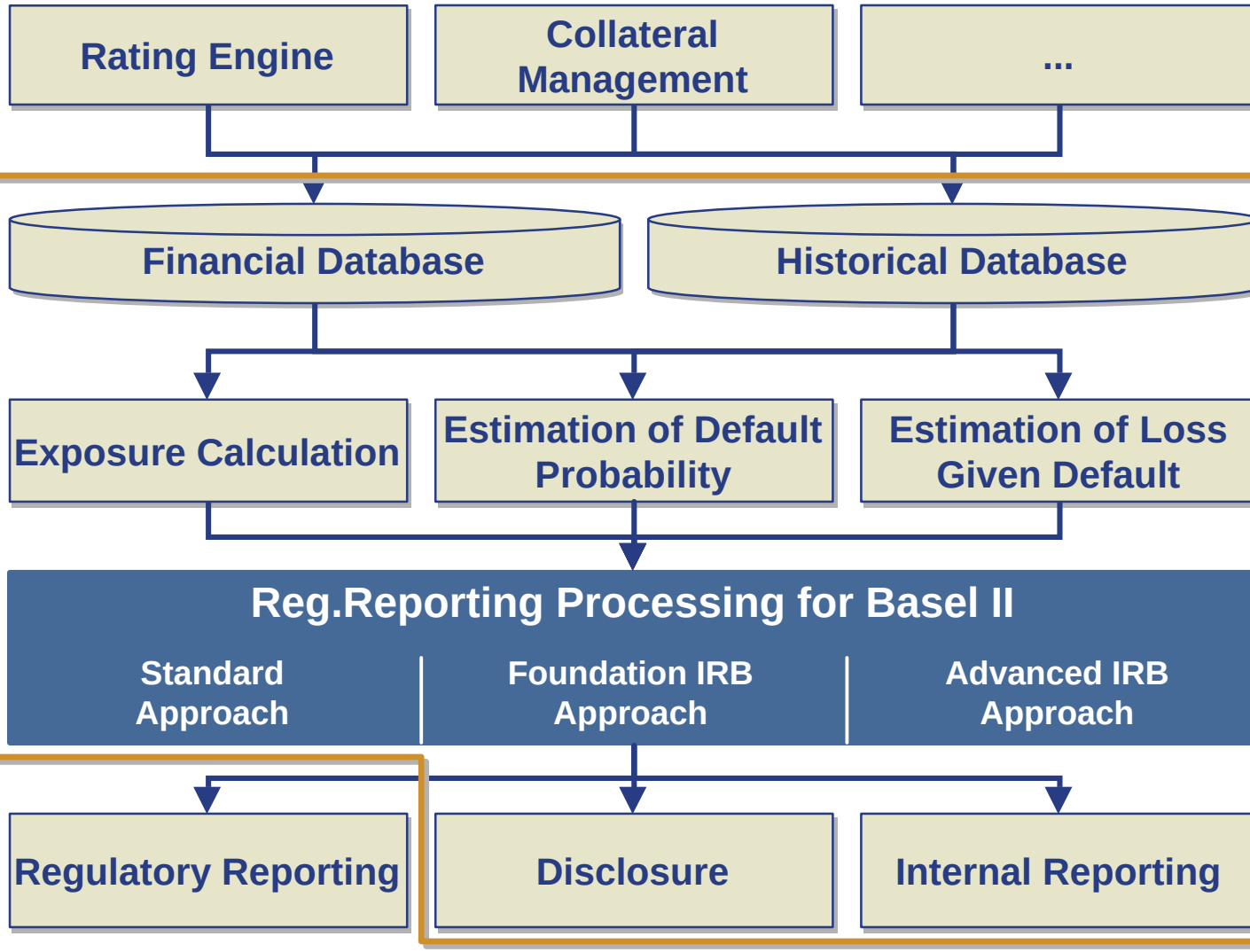


➔ **Basel II requires an integrated setup for the all these processes.**

Solution: mySAP Banking Basel II

mySAP Banking Basel II

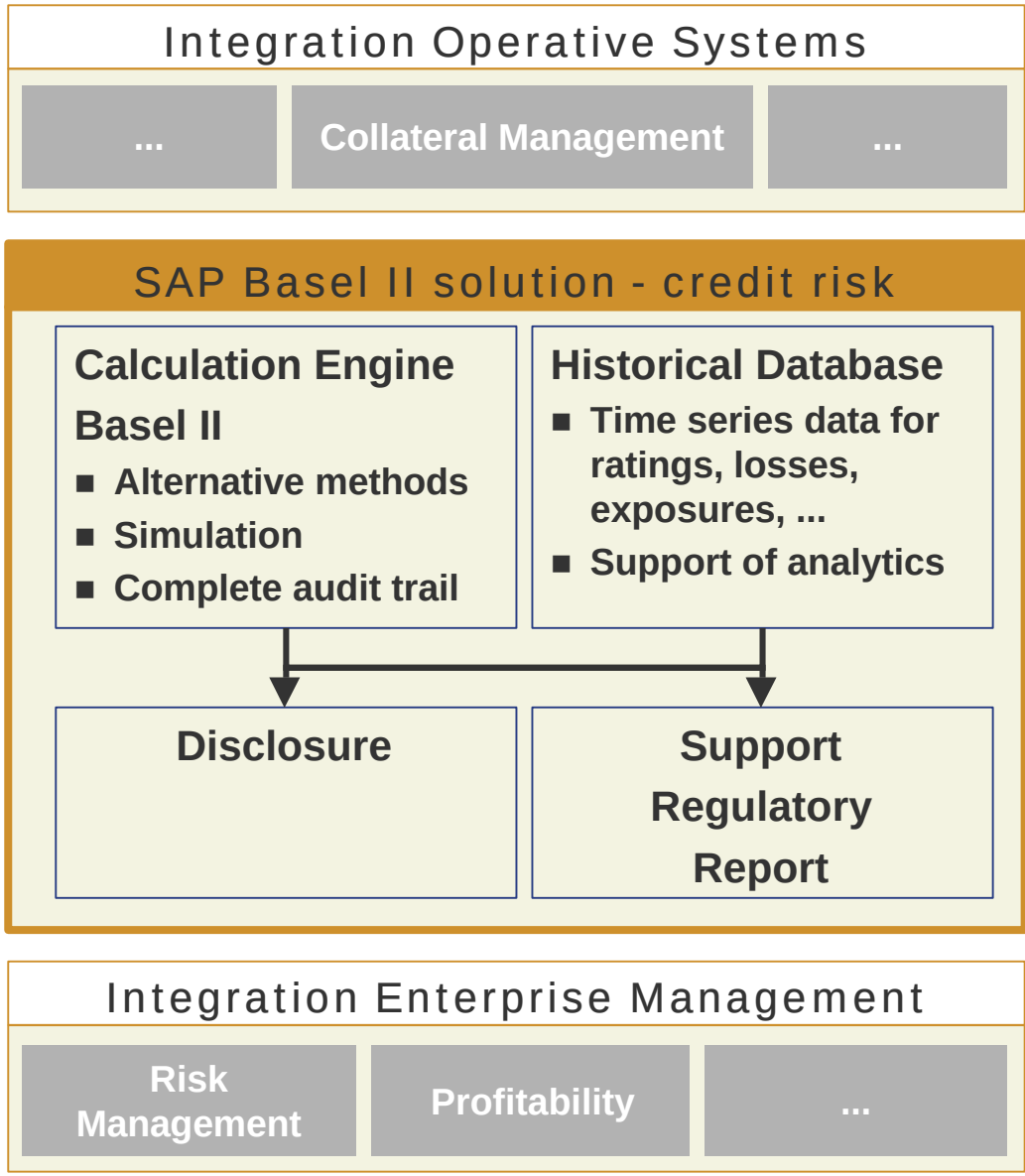
➔ SAP offers a <u>comprehensive solution</u> for the integrational challenges of Basel II !



mySAP Banking Basel II in Brief

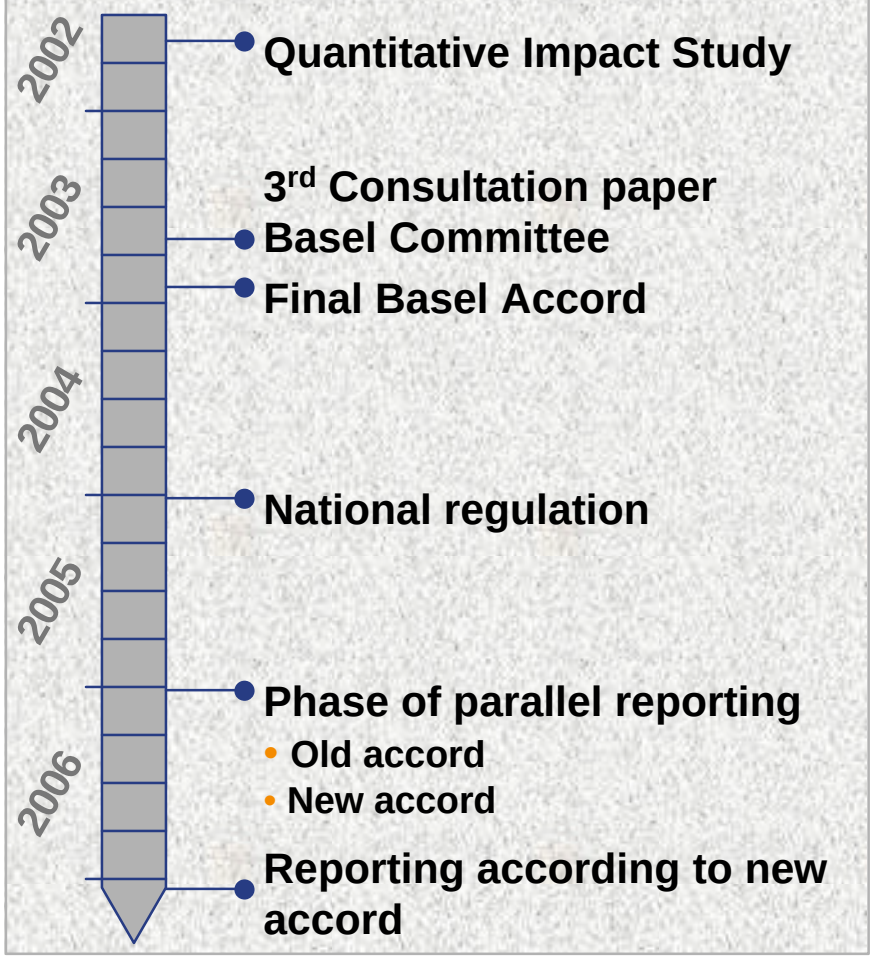
SAP's solution

- **Implementation of all approaches for credit risk**
- **Emphasis on the integrational challenges**
  - **SAP-systems**
  - **Non-SAP-systems**
- **Integration with regulatory rep.**
  - **country-spec. cooperation**
  - **For example, in Gemany cooperation with CMG Finance**
- **In addition dedicated Basel II compliant solutions esp. for**
  - **Collateral Management**
  - **Business Partner**
- **Basel II is fully integrated in SAP's Enterprise Risk Management product suite**



Market Situation: Timing

Basel II – Assumed Time Schedule



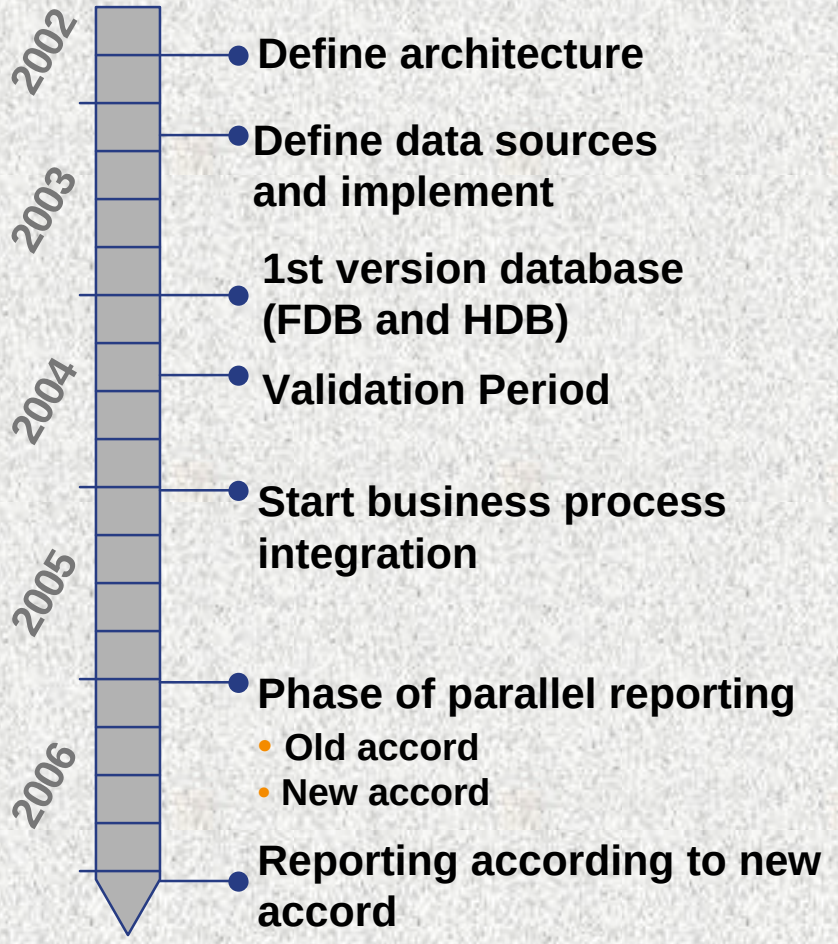
A committed time schedule is still not available from the Basel Committee and the national regulators.

However, most banks assume that the current dates in discussion are final.

- **Some national regulators have already confirmed Jan 2006 as the start date of the new Basel Accord.**
- **Some countries would even like to apply the rules earlier.**

Business Need: Timing

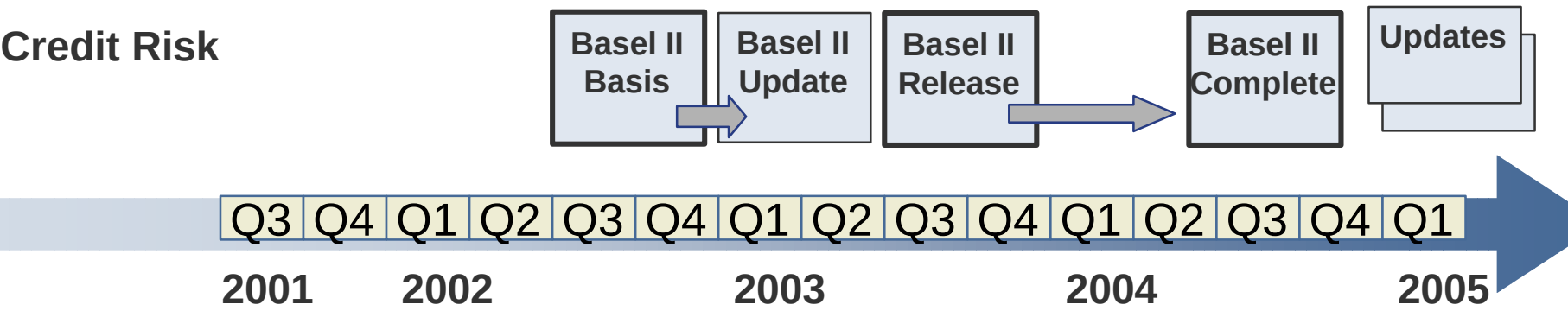
Typical time schedule to implement the new infrastructure



Many institutions have realized that for a successful implementation of the required new infrastructure a timeframe of at least three years is realistic

- Banks have learnt their lessons from the first Basel Accord
- Development of a comprehensive datawarehouse takes at least 1½ years
- First part concerning historization should go life in Jan 2004 at the latest
- The time for business process integration is important for achieving the expected added value of the whole exercise

SAP Time Schedule for Basel II Solution



- SAP offers a sound basis for the challenges of Basel II
- The implementation project can be started today
- SAP offers a completely transparent release cycle to comply with any additional Basel II requirement
- The development schedule goes hand in hand with the implementation schedule
  - Components are delivered exactly when they are required
  - Stability for implementation project

Business Need: Handling of „Moving Target“ Basel II

Support the management of the risks / uncertainties involved in a Basel II project:

- **Get the business content fixed**
- **Allow to set up a time schedule**
- **Know which resources are required when**
- **Support a quantification of the overall effort in terms of costs**

Significance of Basel II

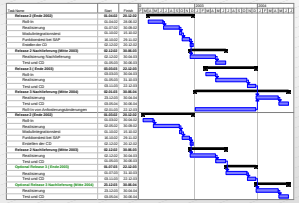
"The precise additional cost of Basel II will no doubt be in the hundreds of USD billions for the banking community."

Credit Suisse Group, May 30, 2001

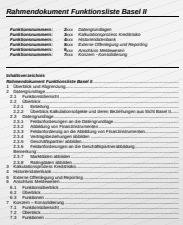
- **However, these costs are not pure investments.**
- **They also have to cover the uncertainty of the „moving target“.**

SAP provides a superior basis for project planning

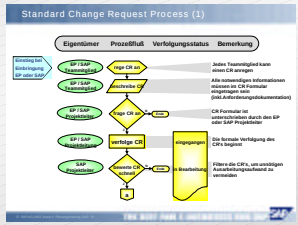
Development Project Plan



List of Functions



Change Management Process

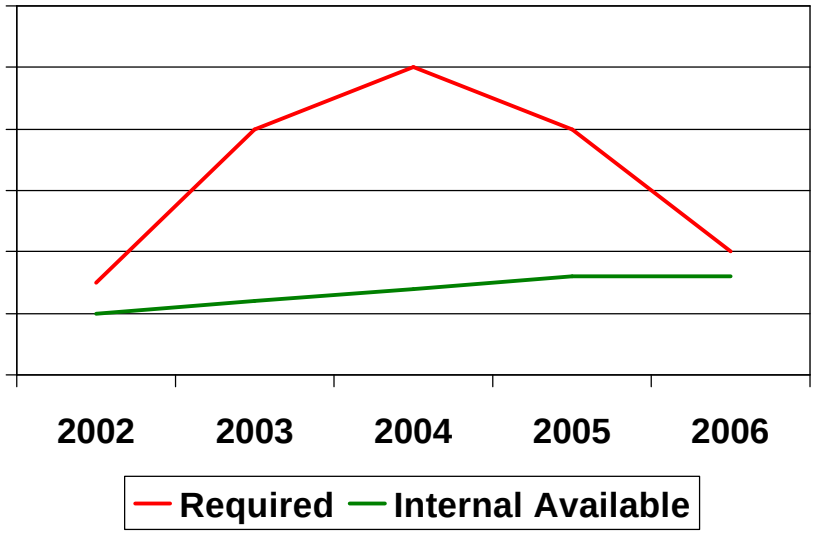


Combined knowledge from the banking industry, SAP, and consulting partners provides an outstanding basis for a comprehensive project planning

- **Complete list of function**
- **Time schedule until 2005**
- **Project plan down to activity level for resource planning**
- **Clear guideline in case of changes of the Basel II requirements**

Business Need: Efficient resource Management

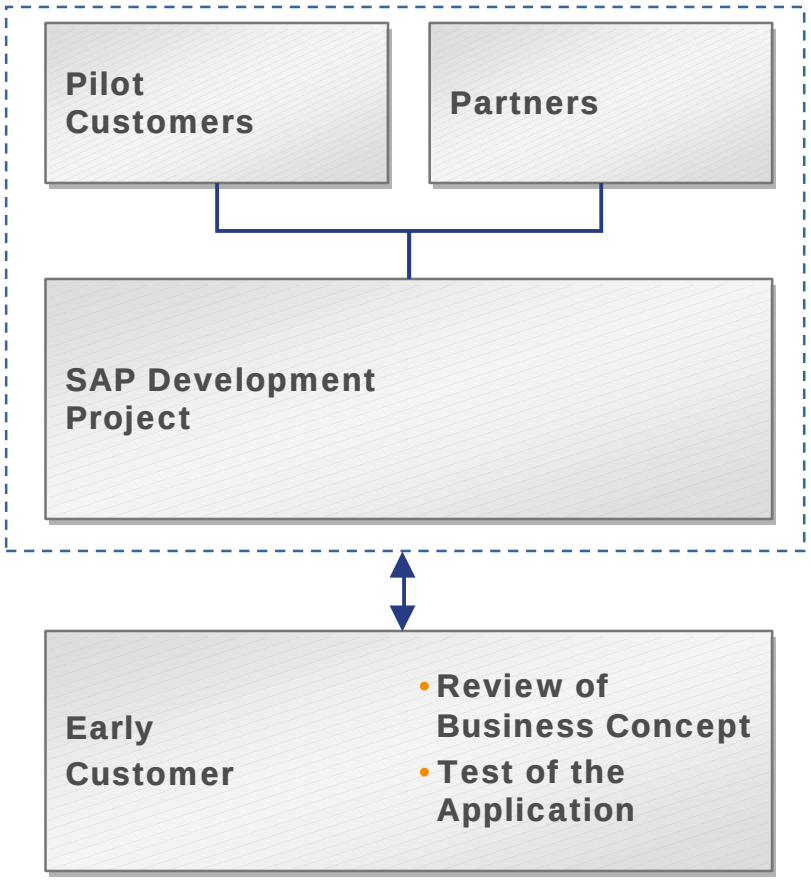
Typical resource Profile



Bank internally only a few well qualified Basel II specialists are available

- **Allocate these specialists to the critical processes**
- **Inter-bank sharing of the effort**
- **Involve external consulting partners**
- **Ensure knowhow-transfer whereever externals were involved**

SAP Project Organization for Efficient resource Management



Step 1: Development of the solution together with pilot customers and consulting partners

- Market standard
- Inter-bank sharing of the effort
- Support of partners

Step 2: Continuous involvement of all interested banks (early customers)

- Reduced workload for internal resources
- Knowhow-transfer ensured
- Implementation support

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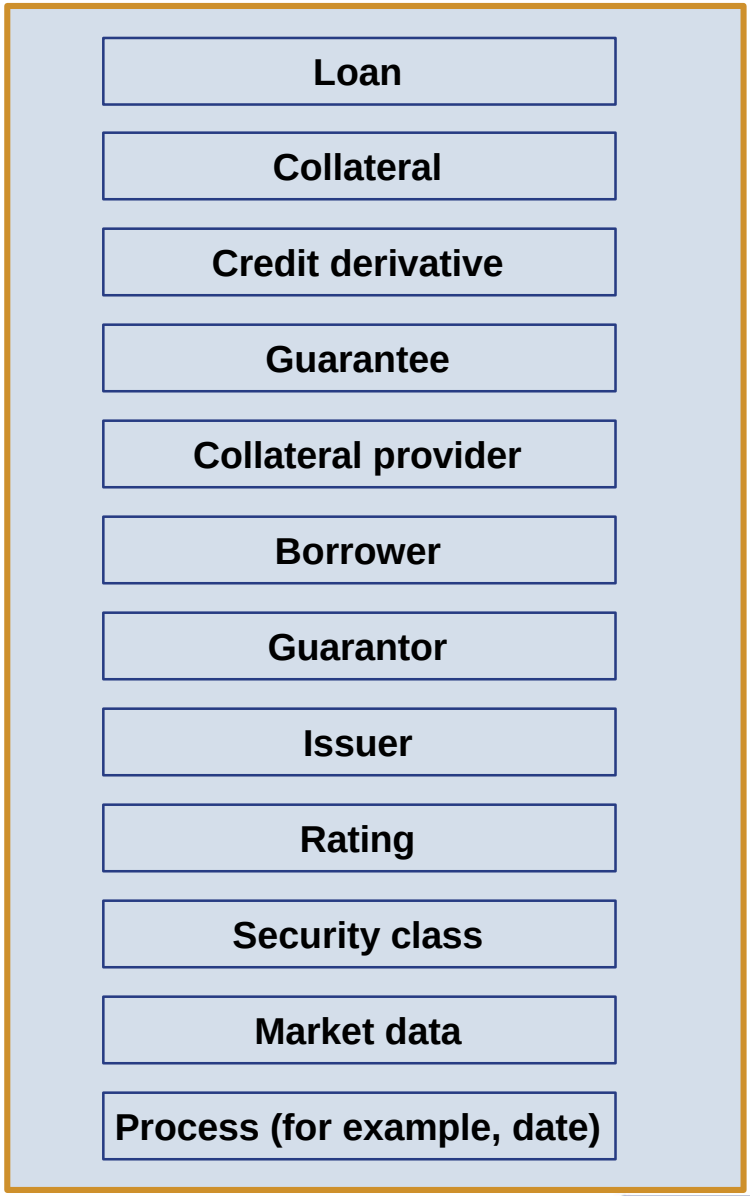
Summary

Data basis for transaction data

- Standard transactions
- Contract structures
- Collateral and guarantees
- Credit derivatives
- Asset securitization

Tasks

- Standardize information
- Filter information
- Provide the infrastructure for the Analyzers



Data Basis and the History Database

Initial position

- The datapool already contains transaction data, which is required for determining and analyzing key figures for a reporting date.
- The transaction data stored in the datapool is available for dates in the past.

The challenges

- Performance: The datapool is not optimized for time series analysis
- Range of data: An additional set of transaction data is required
- Functions: Particular functions are required in order for it to be possible to perform consistent time series analysis
- Audit trail

Procedure

- Creation of a history database to supplement the datapool

History Database: Purpose

The History Database fulfills three main functions:

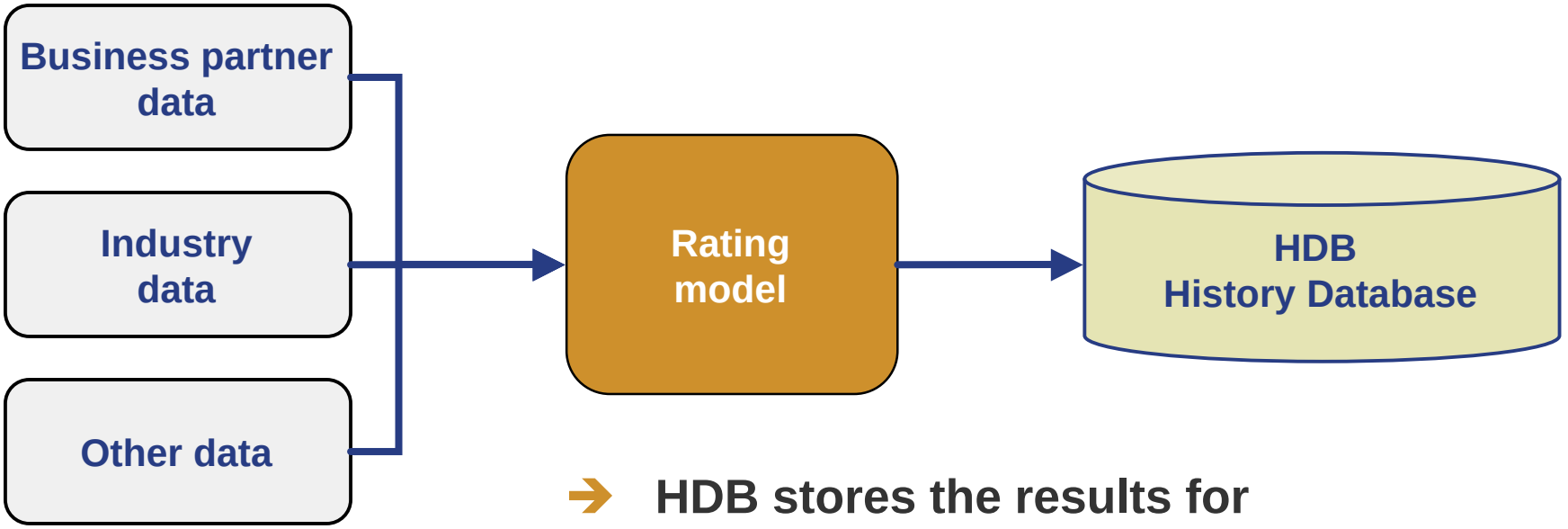
- **Central data store for information related to default data, optimized for time series evaluations**
- **Central data basis for internal models, in particular for calibrating and validating PD, LGD and EAD**
- **Important information basis for reporting and (supervisory) review processes**

History Database: Rating Processes

The most important processes for rating tools (credit rating, LGD, CCF and PD ratings) are:

- **Calibration and validation of the model**
- **Initial rating**
- **Re-rating**
- **Transparency of the rating**
- **Data collection for existing and future models**

The Rating Process



- HDB stores the results for
  - Ratings
    For example: AA, B; 1, 2
  - Values of the input parameters
    For example: Industry = 1005 (chemical industry), assets = EUR100 000 000
  - Administrative data
    For example: Model ID = 10 (corporation), model version = 1.2, Date = 03/12/2002

History Database: Tasks and Functions

Tasks

- Central data memory for information on default data
- Central data basis for internal models (supports calibration and validation of PD, LGD, EAD)
- Support for reporting and regulatory review processes

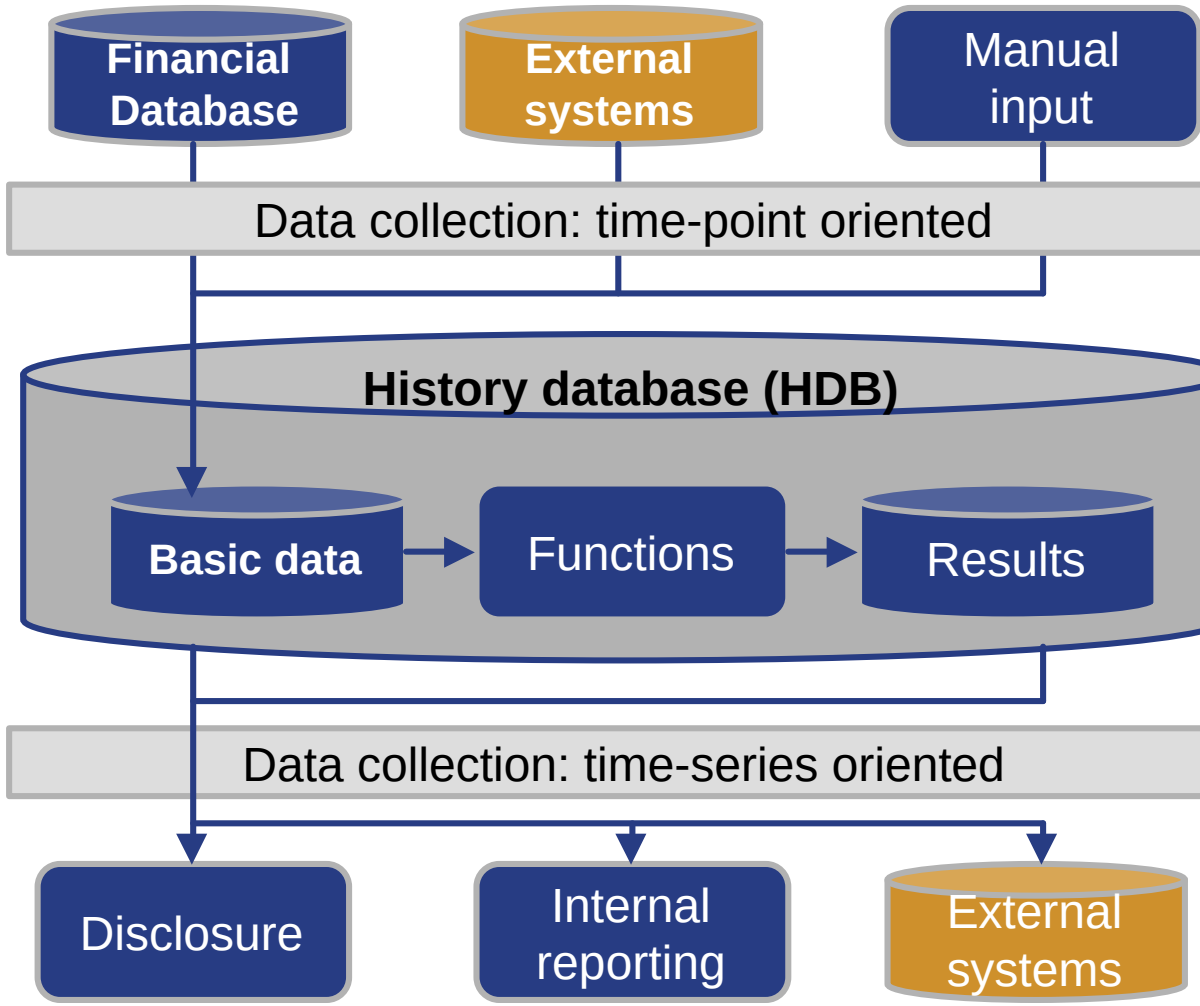
Main functions

- Data management
- Calculation of actual PDs, LGDs, EADs (lines)
- Validation of PDs, LGDs, EADs (CCFs)
- Calculation of historical average values
- Calculation of migration matrixes
- Basis for reporting (for example, time series evaluations)

An Overview of the History Database

Basic data (examples):

- **Business partner**
- **Rating**
- **Default**
- **Risk drivers (rating system, balance sheet figures etc.)**
- **Loss data (value adjustments, revenue from bankruptcy)**
- **Contract data (type of loan, utilizations)**



The Calculation Process

All 3 approaches are supported (Standard, Foundation IRB, Advanced IRB)

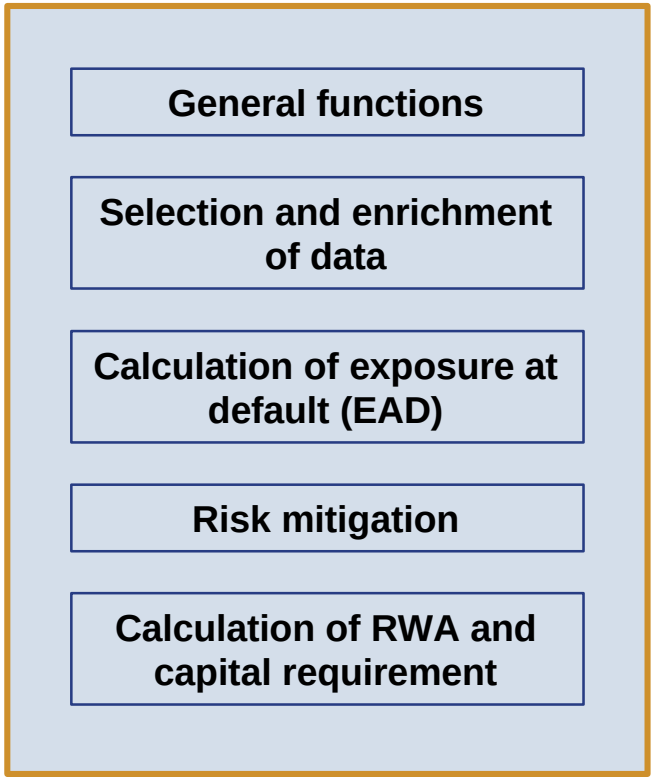
Option of partial use for segments and subsidiaries

Stress tests

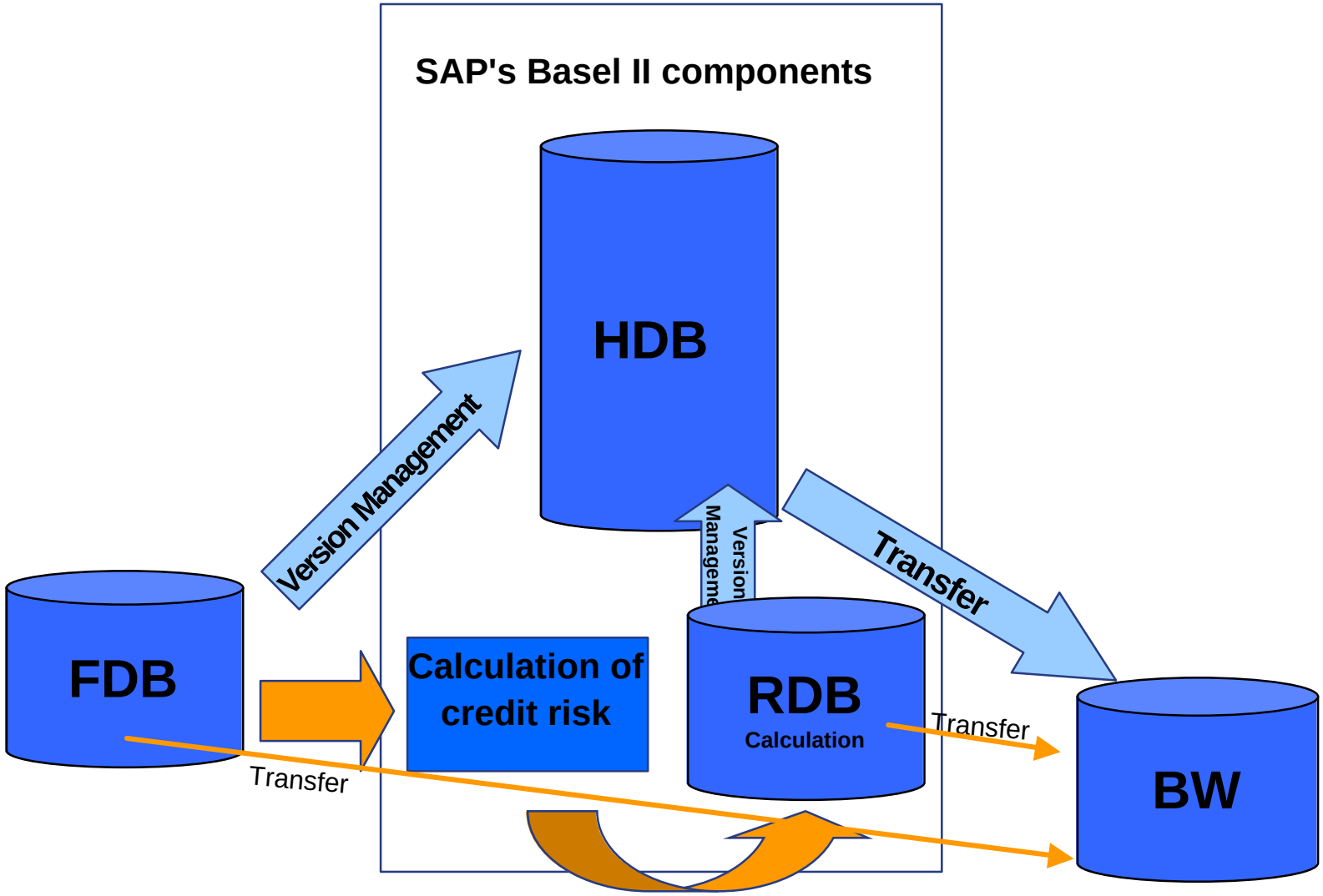
Central exposure engine that can also be used for other Analyzers

Further aspects:

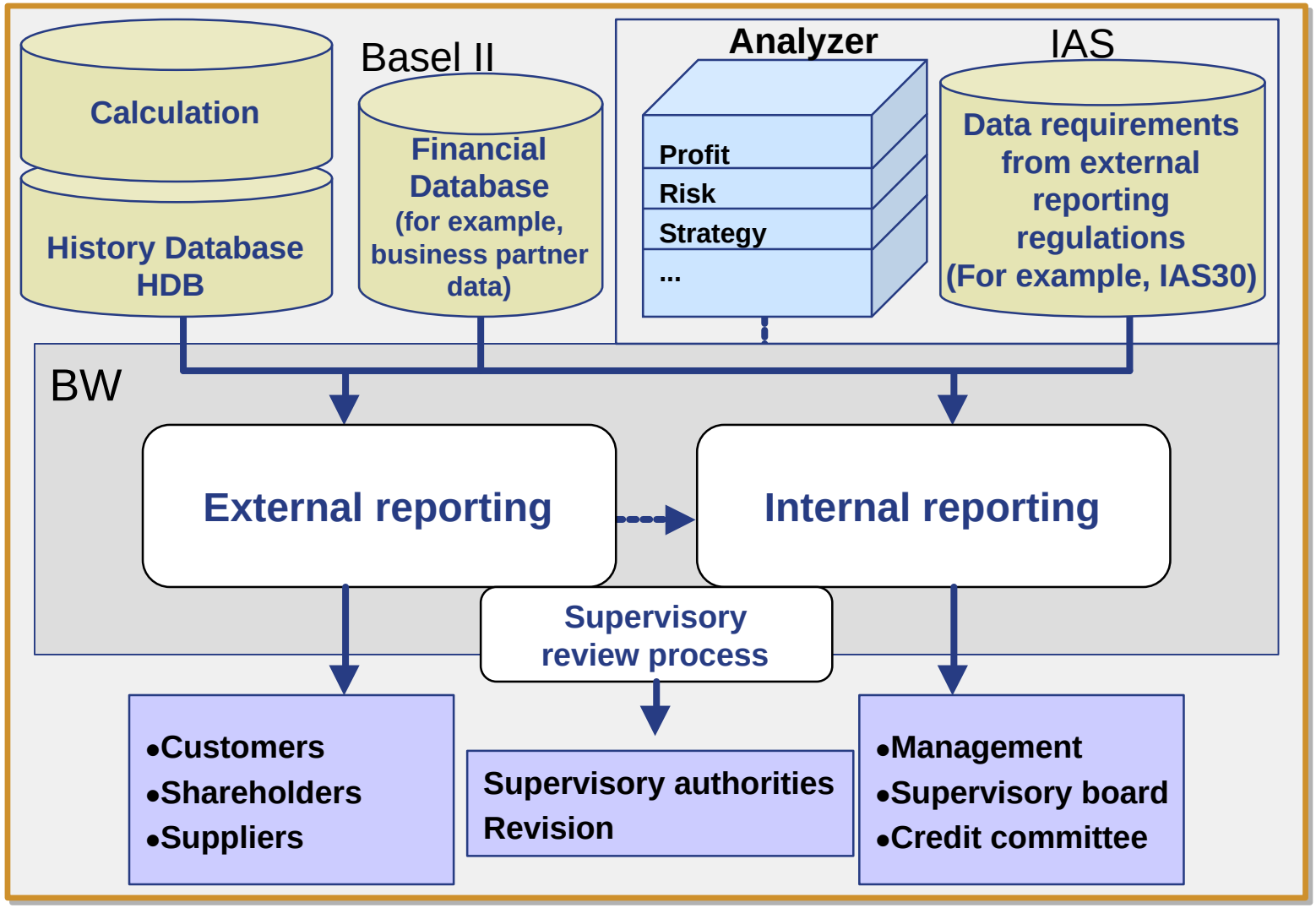
- **Takes into account multiple ratings**
- **Takes into account maturity profile**
- **Allocates collateral to single transactions**



Overview


SAP's Basel II components
HDB
Version Management
Version Management
Transfer
FDB
Calculation of credit risk
RDB
Calculation
Transfer
Transfer
BW

Disclosure and Reporting: An Overview of the Function Block



External disclosure (examples)

- Portfolio reports using the IRB approaches
- Reports showing the geographic and industry distribution of loan items
- Amount of loan items for which risk-mitigating techniques are used (guarantees, credit derivatives, collateral, netting)

Internal reporting (examples)

- Historical time series grouped per rating class
- Depiction of results from back testing and stress tests (for example, LGD, EAD)
- Comparisons of internal ratings with the assessments made by external rating agencies

➔ **Flexibility is of particular significance for internal risk management**

Linking to Regulatory Reporting Systems

SAP provides a standardized interface for regulatory reporting

SAP is interested in cooperating with local regulatory reporting providers

In Germany, SAP is already partnering with CMG Finance

- **Technical expertise in regulatory reporting matters**
- **Division of interface development and maintenance tasks**

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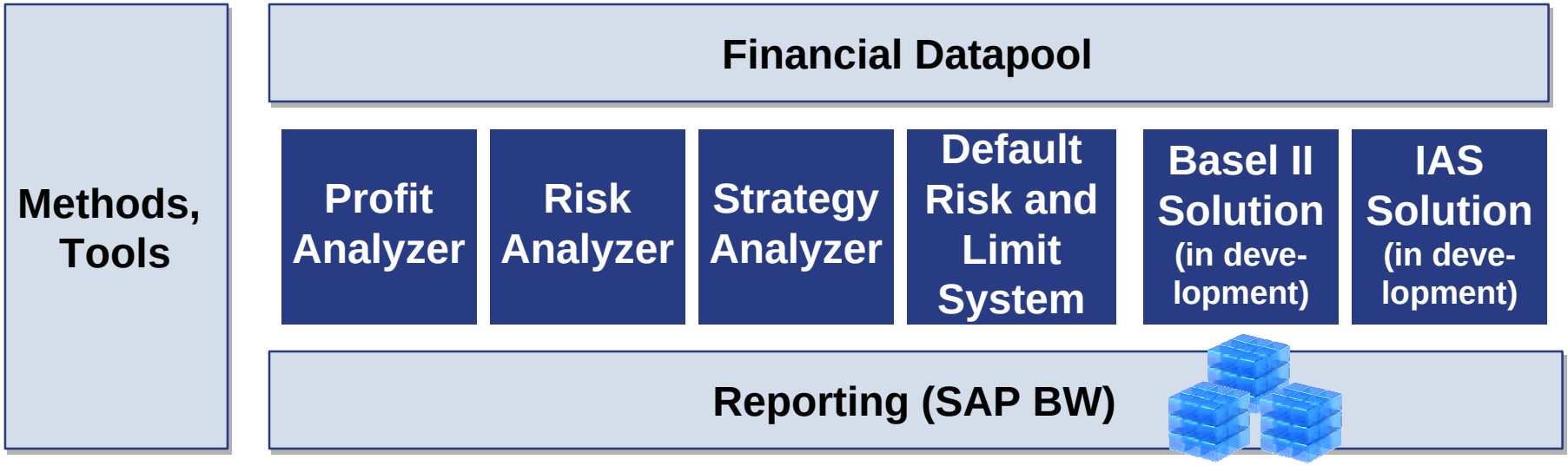
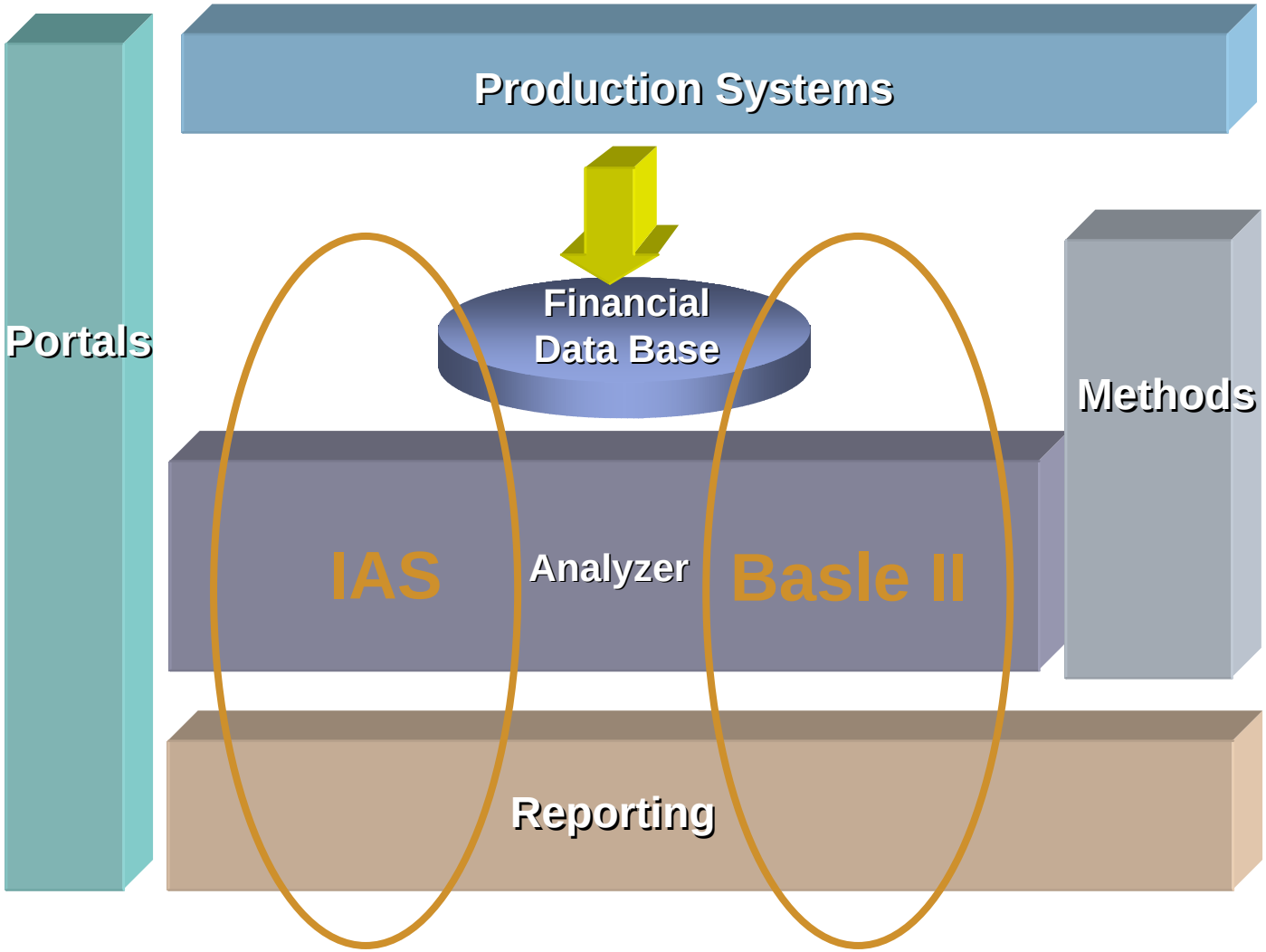
Architecture SAP Enterprise Management



Benefits:

- **Consistent data basis** for Enterprise Management
- **Reduced costs** for development and maintenance of interfaces
- **Reduced reconciliation efforts** and faster reporting
- **Enhanced information quality** (e.g. audit trail, integration of enterprise wide results)
- **Technical robustness** (scalability, mass volume handling)

Development Project: IAS und Basel II



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Basel II Business Case

Business Challenge

- New regulatory requirements for all (regulated) banks scheduled for 2006. Having an emphasis on credit risk, time series information concerning various credit risk related aspects are requested to be available asap.
- The "moving target" Basel II is a substantial project risk.
- Integration of regulatory reporting and internal risk management processes.

Benefits of SAP

- The SAP Basel II Solution is based on the proven Risk Management Solution. The further development schedule ensures in-time compliance with the new regulations.
- With SAP banks can utilize the Basel II investment to implement an integrated credit risk management process.
- Powerful development community with banks and consulting partners to ensure state of the art solution.
- SAP and selected implementation partners offer a comprehensive consulting and implementation package to ensure the live start in time

SAP's Basel II Key Capabilities

The SAP Basel II solution ensures compliance and leverages the benefits of a better risk management

SAP Basel II Solution:

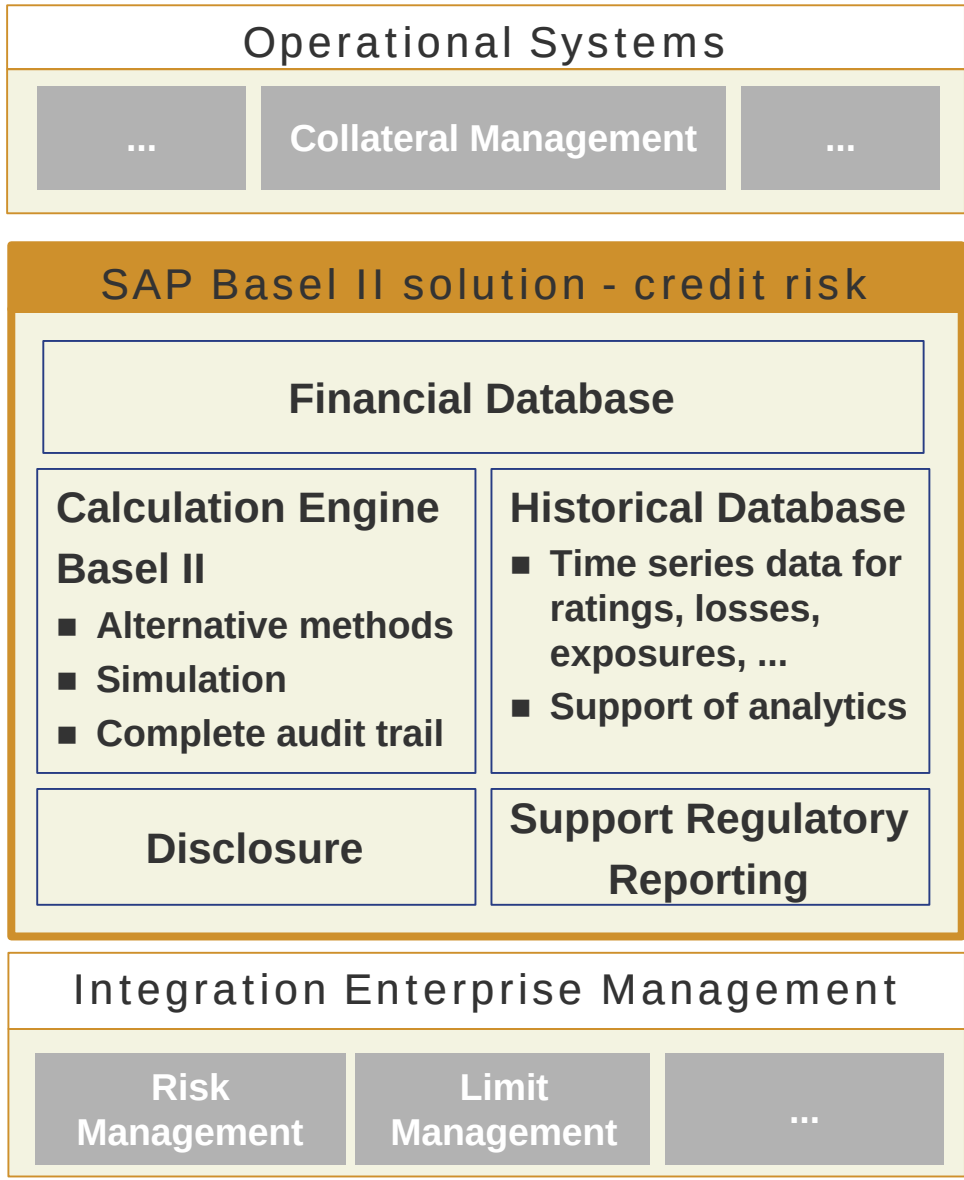
- **Flexible Financial Database with complete data model for all financial products**
- **Complete coverage of all Basel II related methods for the calculation of exposures and capital figures.**
- **Historical database for the calculation and validation of the credit risk parameters (esp. probability of default, loss given default)**
- **Optional integration with the internal risk management framework, such as limit management and credit portfolio management**

SAP's Basel II Solution

The following banks have decided for SAP's Basel II Solution:

- **DZ Bank (EUR 210 bn*)**
- **LB Schleswig-Holstein (EUR 90 bn*)**
- **Hamburgische LB (EUR 88 bn*)**
- **Westdt. Immobilienbank (EUR 15 bn*)**

*** Total Assets**



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