

Informatics For Business Administration



Client/Server Architecture (SAP R/3)



SAP NetWeaver



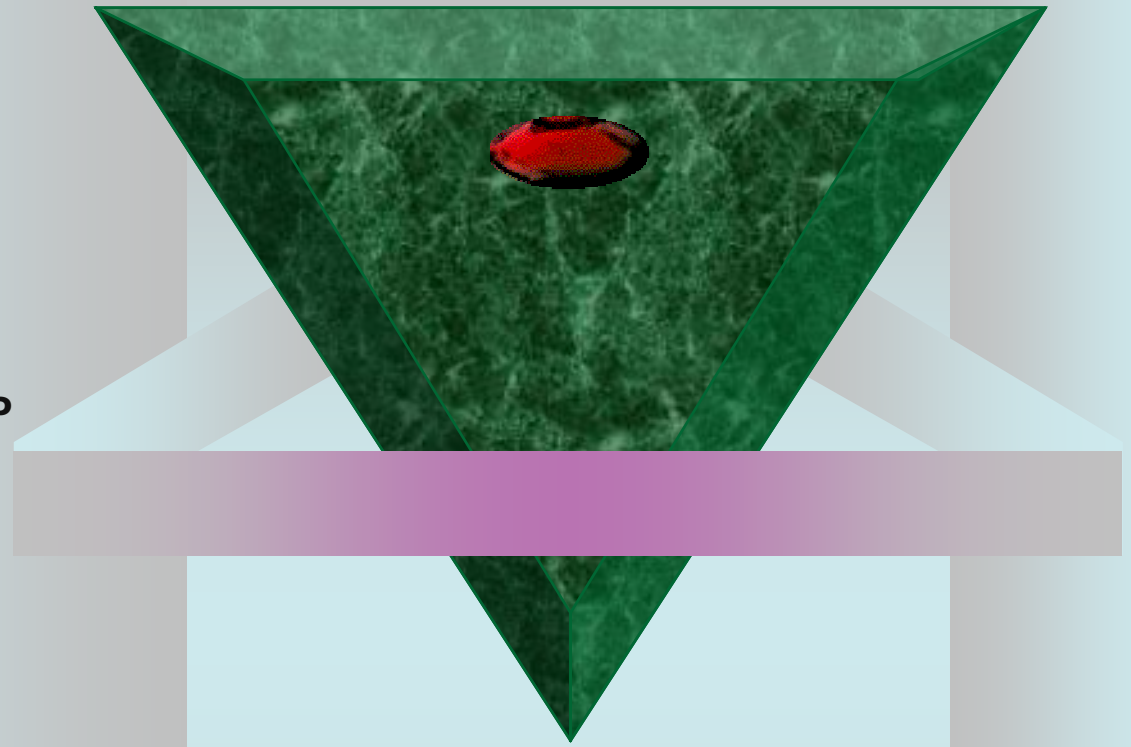
SAP Web Application Server



SOA (SAP and SOA)

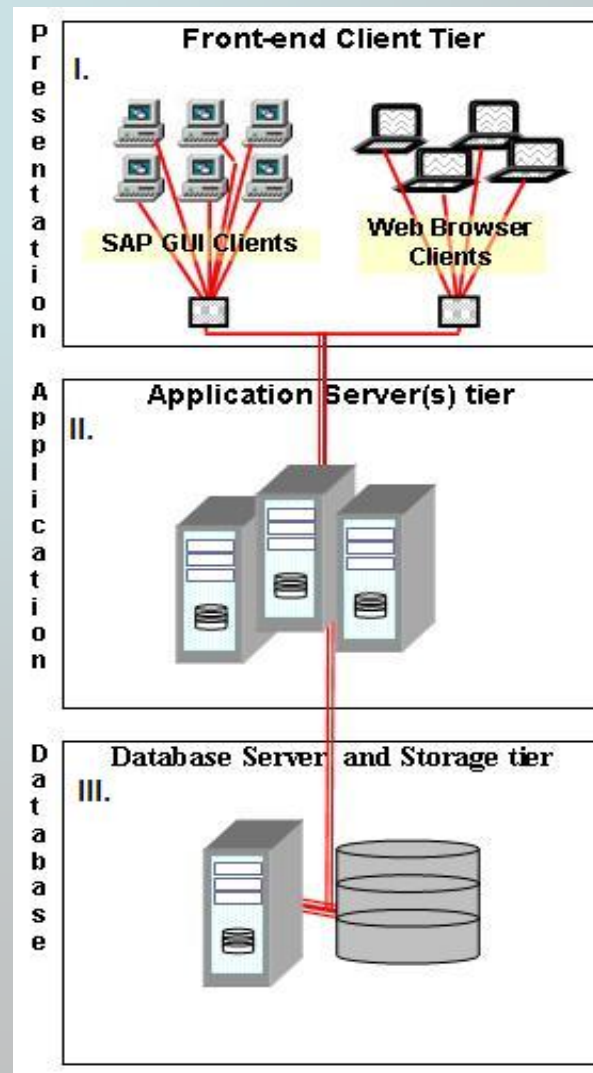
Enterprise SOA

SAP Project basics



Chapter II Architectures of Business Administration Application

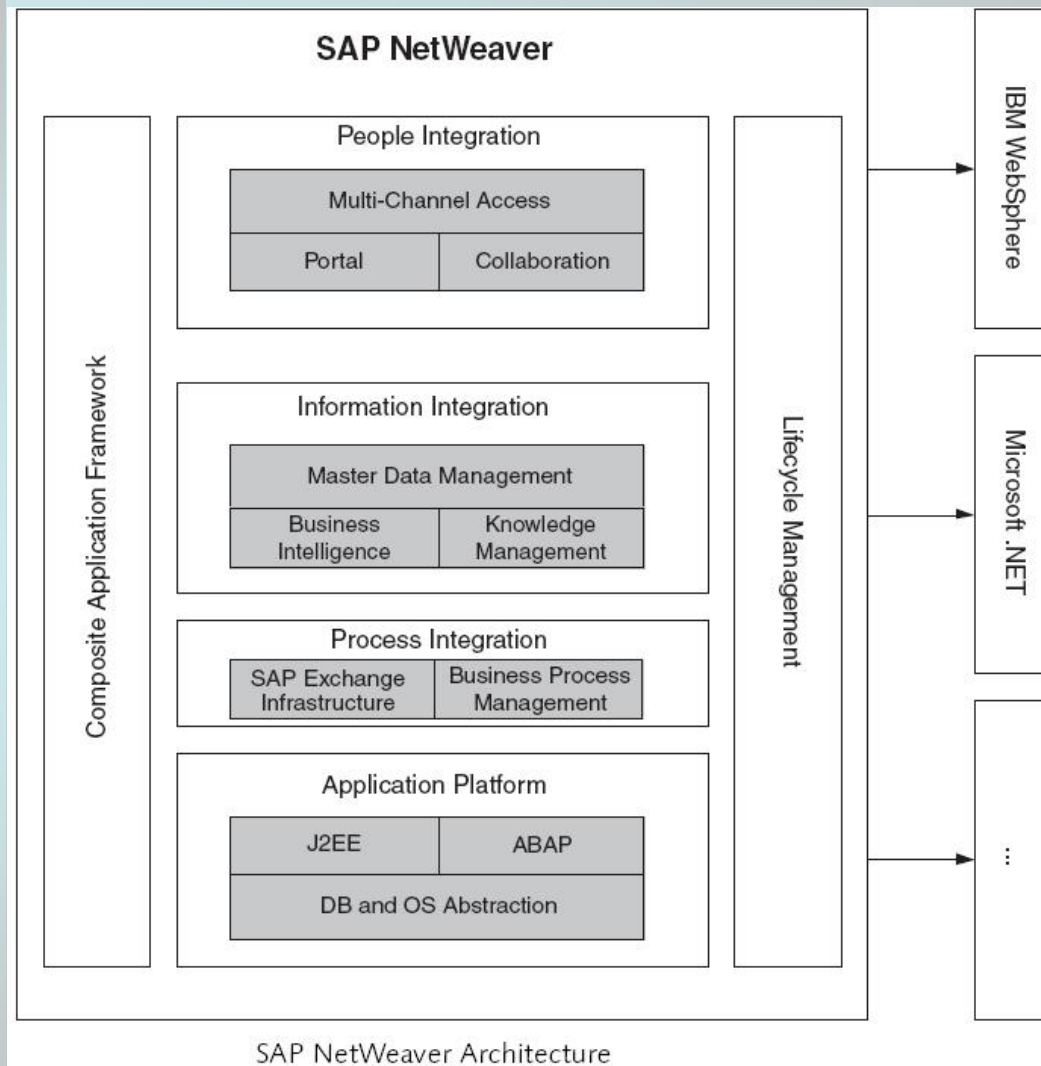
SAP three tiered architecture



SAP GUI:

- for Windows;
- for Java;
- for HTML.

Figure 2.1 The SAP classic three-tiered architecture requires a database server, one or more application servers, and any number of front-end clients



People Integration: SAP Enterprise Portal, Collaboration, SAP Mobile Infrastructure

Information Integration: Business Intelligence, Knowledge Management, SAP Master Data Management

Process Integration: SAP Exchange Infrastructure, Business Process Management

Application Platform: ABAP Personality, Java Personality, Business Services and Features, Connectivity, User Interface, Database and operating-system abstraction

Figure 2.2 SAP NetWeaver platform (<http://help.sap.com> SAP System Landscape Optimization, Andreas Schneider-Neureither [Ed.], SAP Press)



SAP products

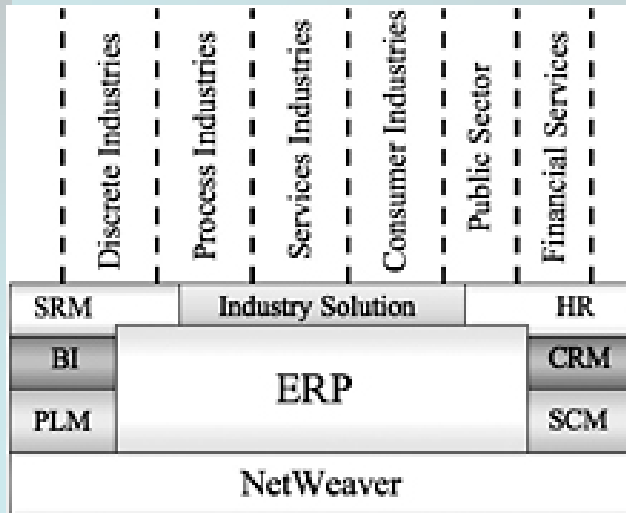
With SAP NetWeaver SAP has repositioned their high-end products into three main streams:

- ◆ mySAP™ Business Suite, contains all products and components like ERP (formerly known as R/3), CRM, SRM, and SCM (formerly known as APO).
- ◆ SAP NetWeaver, the software technology stack that runs all business packages (it should be seen as the software glue that connects everything. Represents all integration software like Portals, PI (formerly known as XI), and BI.
- ◆ SAP Industry Solutions, are all add-on software packages that are specific to a certain industry.

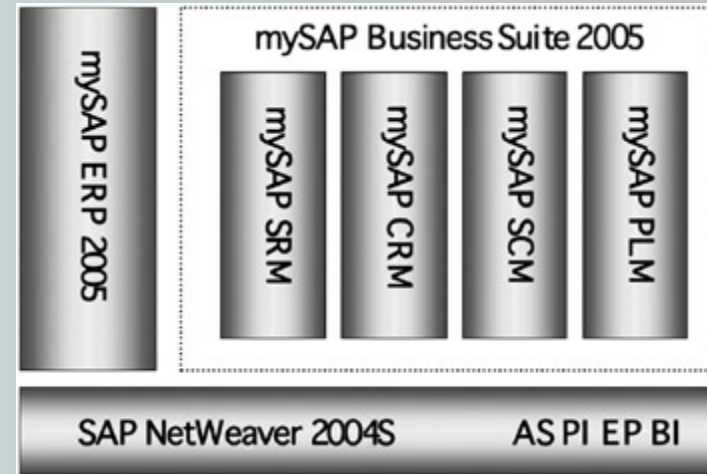
Other software offered by SAP are SAP BusinessOne for small-sized businesses and SAP All-in-One for medium-sized businesses (SAP All-in-One is based on the same technology foundation as SAP NetWeaver and Business Suite).



SAP products



SAP business solutions and components.
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SAP NetWeaver 2004S and mySAP Business Suite 2005

SAP products evolution

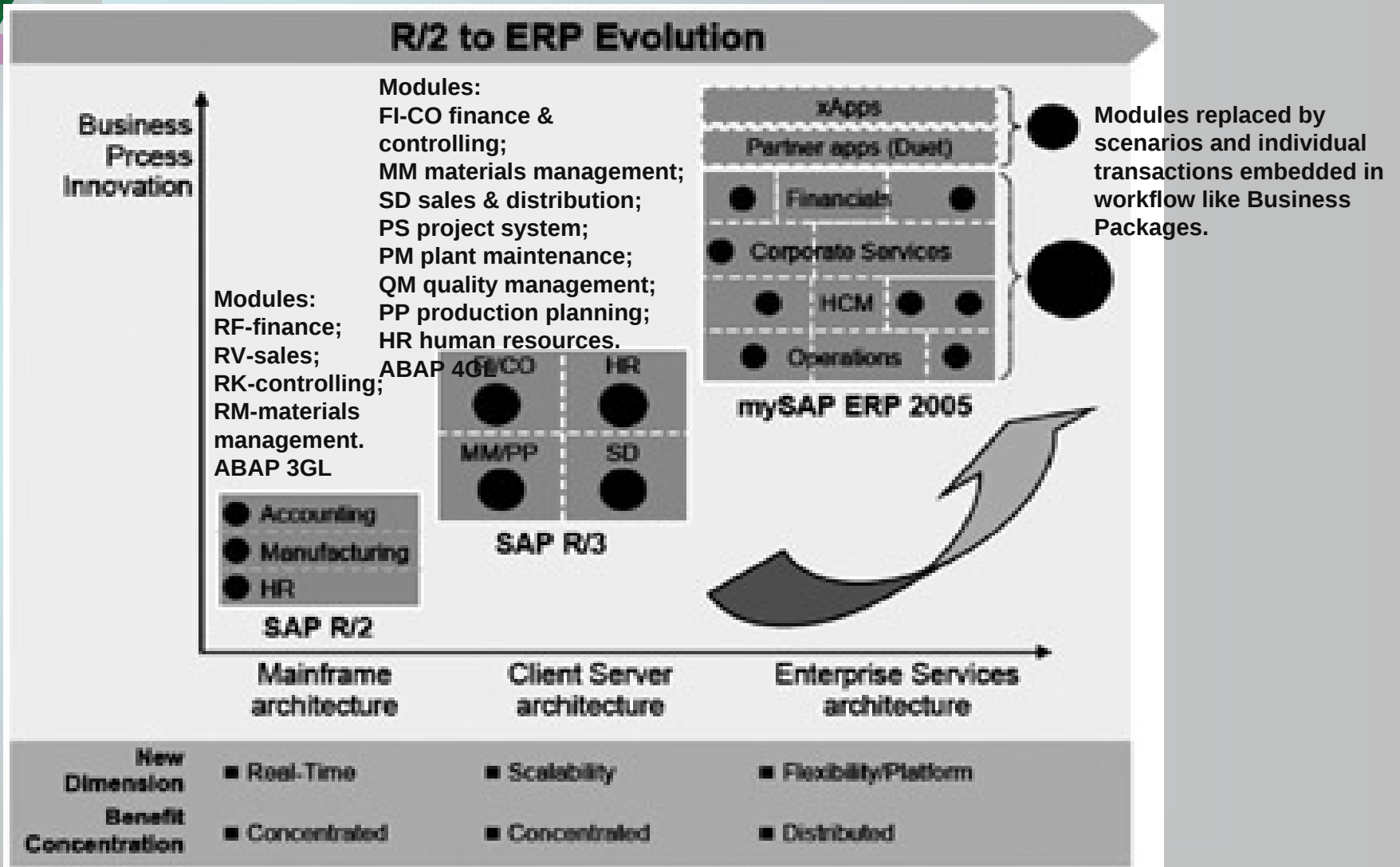


Figure 2.3: Evolution from SAP R/2 to mySAP ERP 2005. ©Copyright SAP AG.

(<http://help.sap.com> SAP System Landscape Optimization, Andreas Schneider-Neureither [Ed.], SAP Press)



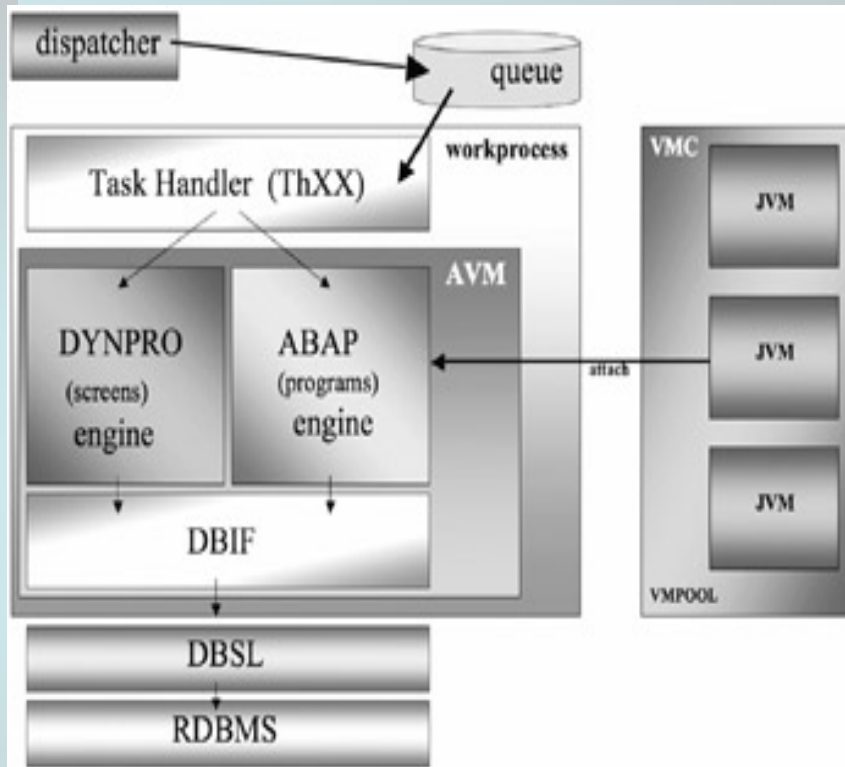
Types of work-processes (wp):

- **Dialog** wp (processing interactive dialog or screen transactions);
- **Batch** (batch load or batch activities);
- **Spool** (printing);
- **Update** (process asynchronously database processing);
- **Enqueue** (SAP table lock or enqueue activities)

Figure 2.4 Components of Web Application Server (<http://help.sap.com>)



Building blocks of an ABAP workprocess



AVM – ABAP Virtual Machine
DYNPRO – Dynpro technology
DBIF – Database Interface
DBSL – Database Software Layer
VMC – Virtual Machine Container
JVM – Java Virtual Machine

Figure 2.4a Building blocks of an ABAP workprocess

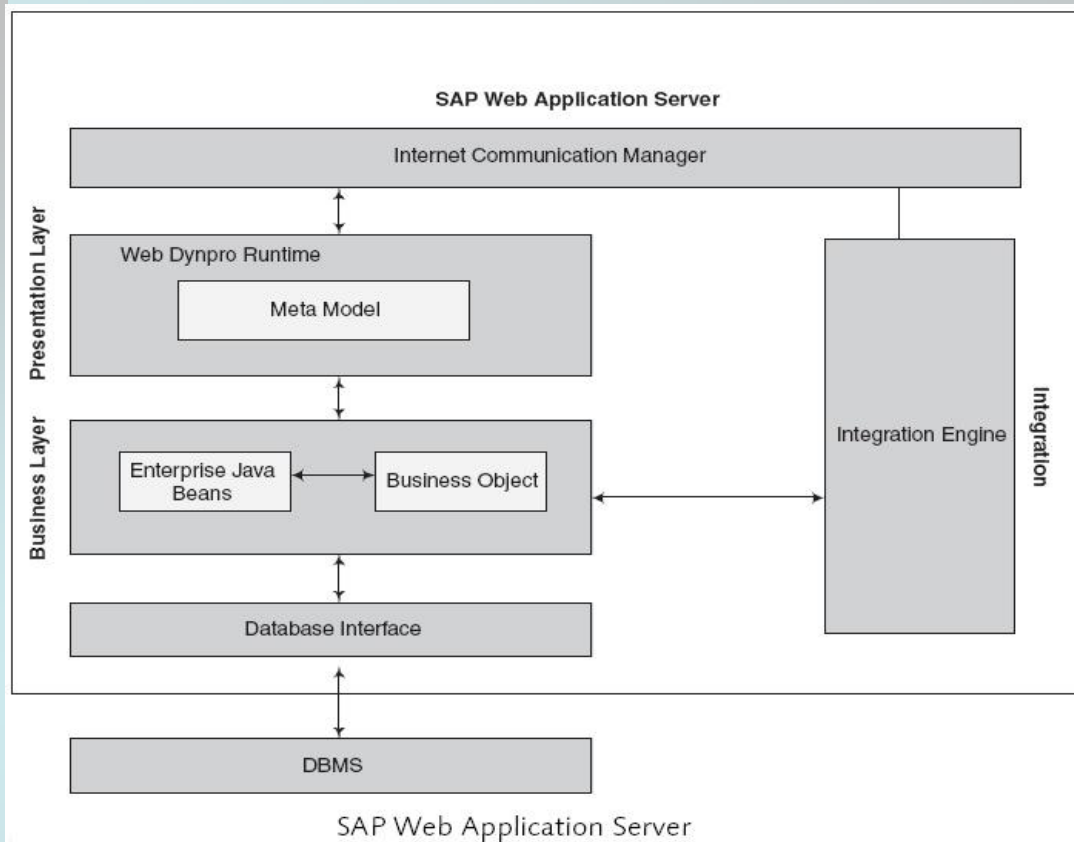
ABAP – "Allgemeiner Berichts –und Aufbereitungsprozessor" (General Reporting and Preparation Processor – 1970);
ABAP/4 – Advanced Business Application Programs/fourth generation (1992 with SAP R/3)



SAP layers and architecture

From a technical perspective, currently, SAP supports four different technical architectures:

- The first is SAP BusinessOne Engine, which is the foundation of the SAP SMB Business Solutions (was acquired from a company called TopManage);
 - The second is the foundation of SAP Enterprise Portals (was acquired from a company called TopTier);
 - The third is the foundation for all ABAP-based applications (such as ERP (R/3), CRM, SCM Server, BI, and SRM) and is based on what we know as the SAP Web Application Server and use to be known as the SAP Basis layer or BC Component.
 - The fourth is based on SaaS (Software as a Service) and marketed as SAP Business By Design (the solution is accessible via the Internet and meant for small companies and is hosted by SAP).
- 



Uses *threads* to communicate over Internet;
Uses *memory pipes* for communication with data process for HTTP requests;
ICM:
-Distribute user requests to presentation layer;
- sends Web Services requests to integration layer:
- if addressed by an application acts as client or as server.

Figure 2.5 SAP Web Application Server (SAP Web AS)

(<http://help.sap.com> SAP System Landscape Optimization, Andreas Schneider-Neureither [Ed.], SAP Press)

Offers a platform for efficient using of Web Applications and included in all mySAP installations (contains Presentation and Application Layers)

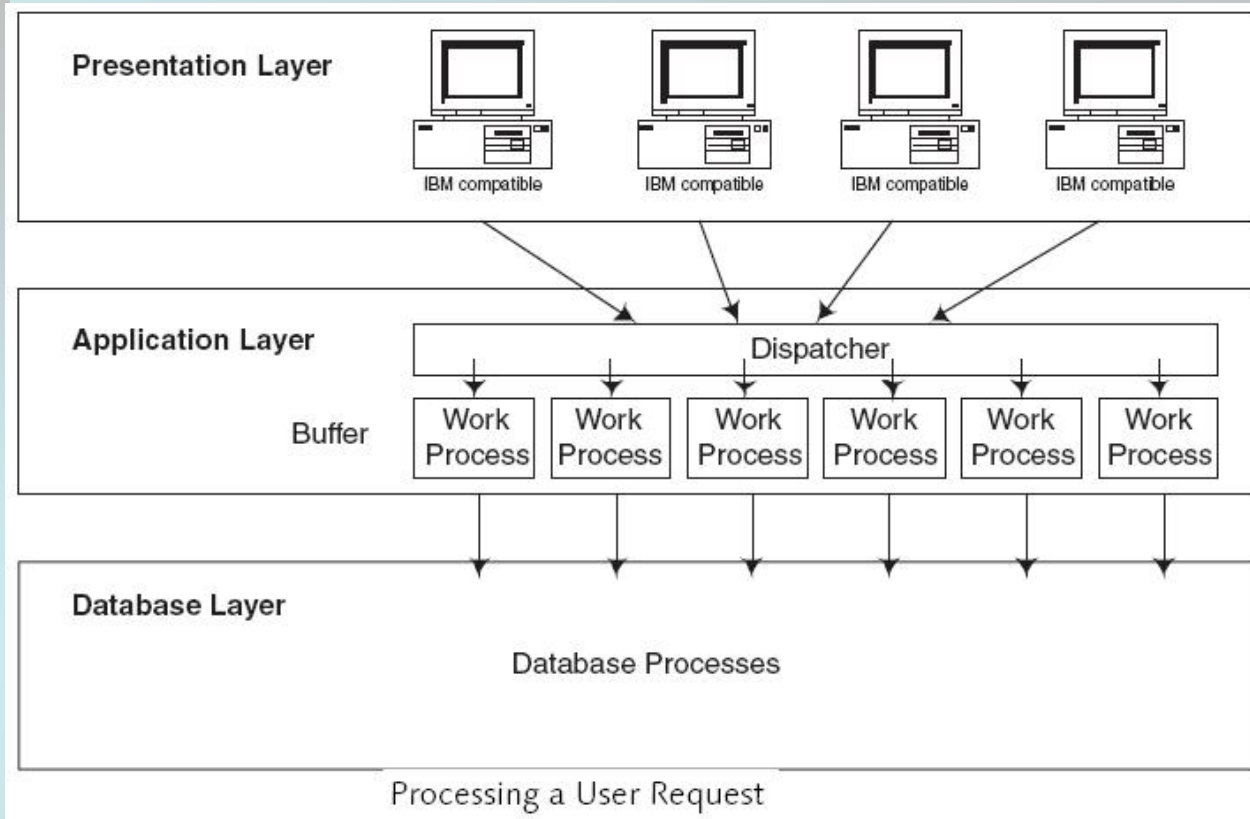


Figure 2.6 Request Process Flow - Instance and buffer

- Dispatcher;
- Buffer;
- Instance (Central Instance)



Communication

- ◆ SAP supports several connection standards (such as Microsoft .NET, J2EE etc);
- ◆ RFC (Remote Function Call) and IDocs (Intermediate Documents) used for distribution
 - RFC: aRFC (asynchronous, real time -> call functions from external modules), sRFC (long time running -> call functions which are processed in parallel), and tRFC (Transaction RFC) for uniquely execute transaction (TID – Transaction Identifier), qRFC (calls placed in queue), xRFC for Web enabled exchange of information with XML;
 - ALE and IDocs: Application Link Enabling (ALE) via distribution model, data exchanged asynchronously by a standard document by IDocs
- ◆ BAPI – Business Application Programming Interface;



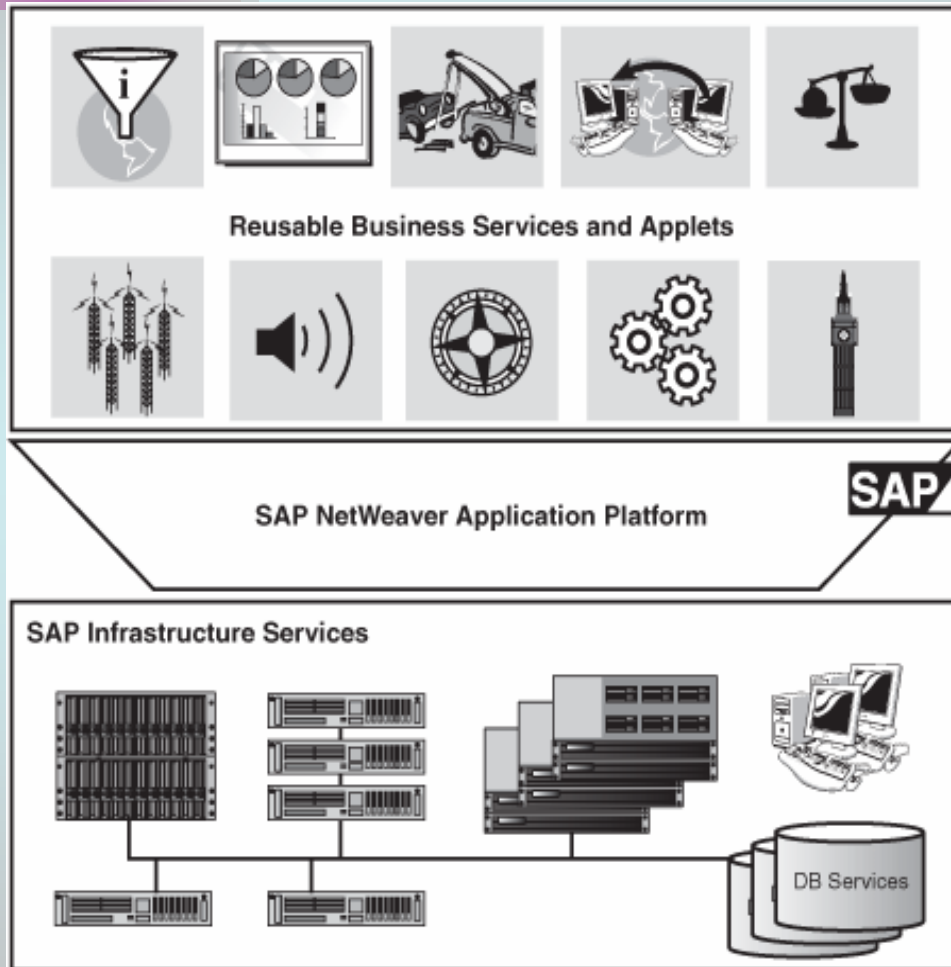


Communication

- ◆ Telephone, Fax, and eMail:
 - Communication via SAP enterprise portal
 - Sending and receiving documents via SAPconnect
 - Integration of groupware products
 - Telephone integration using SAPphone
 - Calendar and scheduling overview
 - Generic object services (such as Business WebFlow, SAP Achive Link)
 - XML documents



Enterprise SOA



Enterprise SOA is a blueprint for an adaptable, flexible, and open IT architecture for developing services-based, enterprise-scale business solutions. An enterprise service is typically a series of Web services combined with business logic that can be accessed and used repeatedly to support a particular business process. Aggregating Web services into business-level enterprise services provides a more meaningful foundation for the task of automating enterprise-scale business scenarios.

Figure 1.5 SOA allows SAP to be easily extended to take advantage of readily available service-based applications and utilities (Source: Sams Teach Yourself SAP in 24 Hours, Third edition by George W. Anderson, Tim Rhodes, Jeff Davis, John Dobbins, Andreas, August 06 2008)



Enterprise SOA

SAP principles for Enterprise SOA:

1. **Abstraction** - Serves to mask unnecessary or otherwise puzzling details.
2. **Modularity** - An essential property of enterprise services that enables the development of reusable components or building blocks by breaking down services into fundamental units.
3. **Standardized connectivity** - Necessary to describe and enable data sharing and triggering, which in turn can be used to build and combine flexible services into full-fledged enterprise business processes and business solutions or scenarios.
4. **Loose coupling** - Another necessary property that enables individual services to grow and evolve without requiring a rewrite. Loose coupling preserves reusability as well as integration and connectivity between services.
5. **Incremental design** - The ability to enable changes to a service's composition and configuration without requiring a rebuild.



SAP Project basics

All SAP projects are designed, realized, deployed, and implemented by using the SAP project management and implementation methodology called "AcceleratedSAP(ASAP)". This methodology includes 5 phases as shown in figure 1.6.

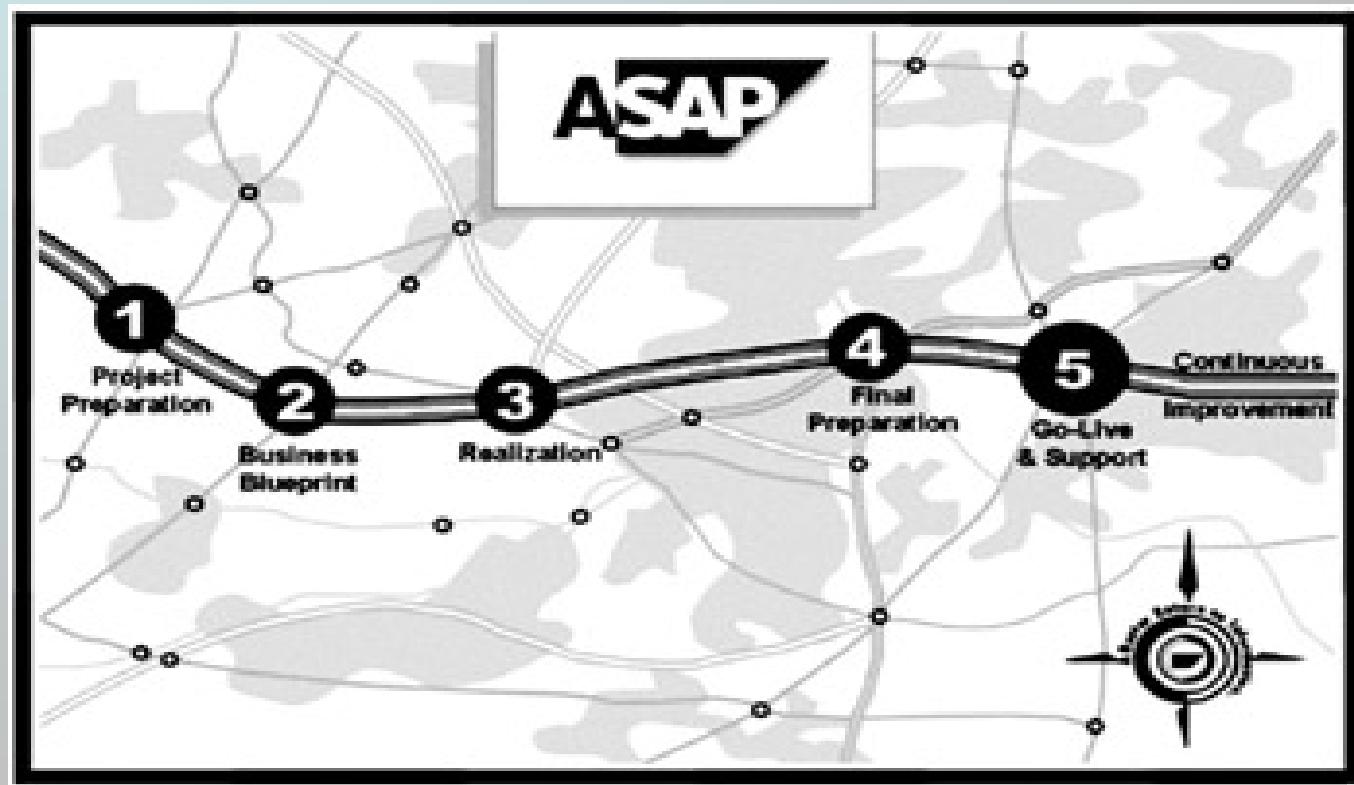


Figure 1 Accelerated SAP phases. ©Copyright SAP AG.
(Source: Upgrading SAP, by M. Sens, Infinity Science Press © 2008)



SAP Project basics - phases

1. Project Preparation. This is the first phase of ASAP, which is used to collect all resources required during the project: staff, equipment, budget, procedures, documentation, and overall project planning. In this phase, you lay the groundwork: You organize your project team; define project standards; document your project plan in detail; solidify the project scope; resolve issues; and define processes. Now's the time for you to identify and prepare everything that may be needed along the way for your project.





SAP Project basics - phases

2. Business Blueprint. This second phase is used to analyze the SAP system and prepare it for the next phases. All business processes are analyzed in such a way that they can be prepared for the new functionality. Therefore, both the functionality of the SAP target release and current company operation way are analyzed. In this phase, you define your solution in minute detail. Your team dig about, gathering information on the business processes that project must integrate, and then your eager team members determine what the final product will look like. Along the way, you can use questionnaires to determine how many roles the team needs, what reports have to be configured, what customization you need to do, and much more.

Several questions arise when planning system landscape:

- What services do I need to execute business processes? What application components can I use to support these services?
- What type of data will be shared between these components?
- What additional technical components will I need?





SAP Project basics - phases

3. Realization. Time for the blueprint created in phase two to start becoming a reality. In this phase, your team custom-codes the basic software to meet your company's specific needs. Also, you execute conversions and create ports. This phase is a lot of work: Realization is typically the longest phase of the ASAP methodology. This phase is used to physically realize the entire SAP system landscape. It includes all technical work required to realize all software products, including SAPGUI on PCs.





SAP Project basics - phases

- 4. Final Preparation.** In this phase, you ensure that your new system executes properly and that your team has fully tuned its performance. You also stress-test your system to make sure that all applications are fully integrated. If stress-testing reveals any problems, now's the time to fix them. This is also when you make sure you train your end users. Finally, handle all change-management activities now, including establishing a support desk.
- 5. Go-Live and Support.** This phase includes all steps that are involved to run and maintain the SAP system during productive use.





SAP Project basics

A new SAP implementation project reflects several common themes including:

- business requirements;**
- SAP application functionality;**
- underlying or enabling technologies;**
- implementation project management concepts.**

All of these can be viewed in terms of road maps.





SAP Project basics - views

From an SAP project perspective must be addressed four primary "views":

- Business view (*why?*) - to completely describe the system's purpose;
- Functional (application) view (*what?*) - to completely describe the system's functions;
- Technical view (*how?*) - to completely describe the system's technical underpinnings;
- Implementation (project management and oversight) view (*with what?*) - to completely describe the system's implementation details.





References

Books

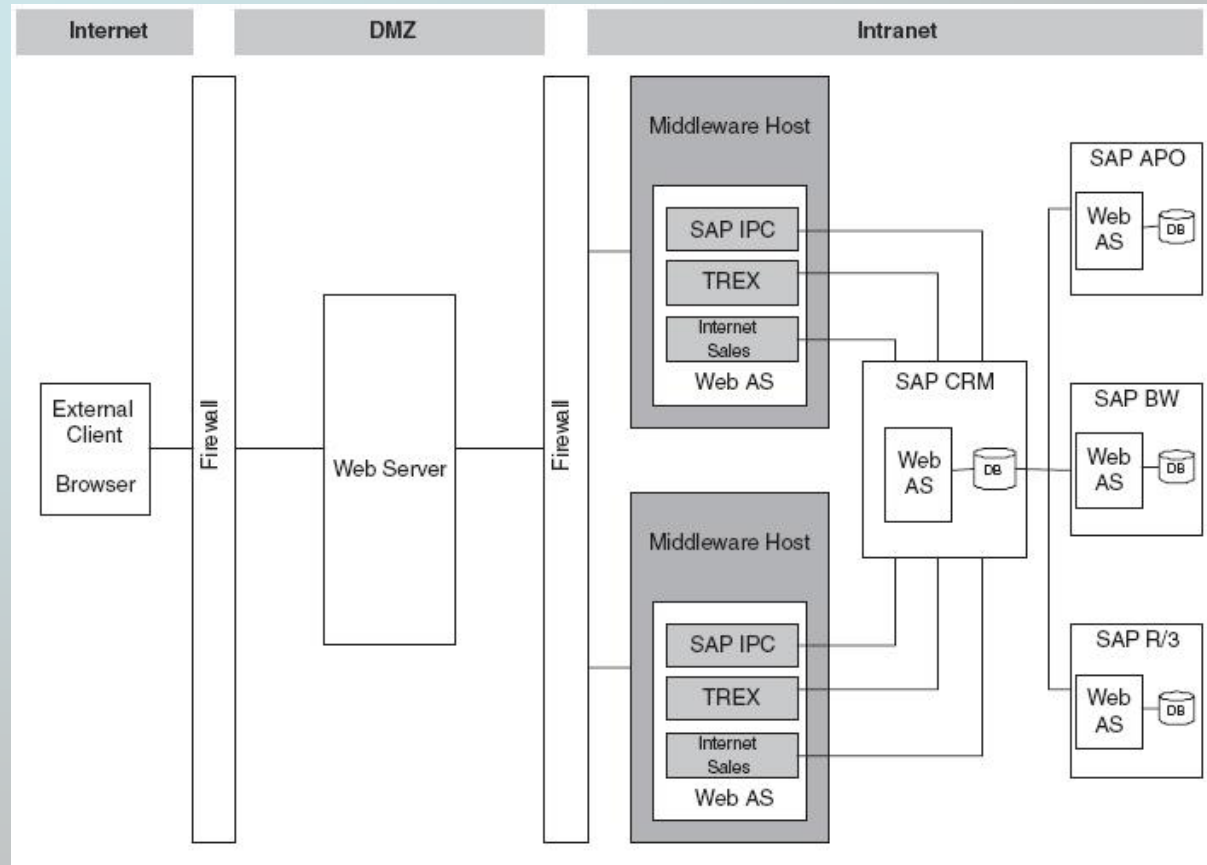
- ♦ SAP NetWeaver For Dummies, by Dan Woods and Jeffrey Word, John Wiley & Sons © 2004 (414 pages)
- ♦ Upgrading SAP, by M. Sens, Infinity Science Press © 2008 (344 pages), ISBN:9781934015155
- ♦ Sams Teach Yourself SAP in 24 Hours, Third Edition by George W. Anderson; Tim Rhodes; Jeff Davis; John Dobbins; Andreas Jenzer, Sams, August 06, 2008
- ♦ SAP System Landscape Optimization, Andreas Schneider-Neureither [Ed.], SAP Press, <http://www.sap.com>

SAP Web Resources

- ♦ www.sap.com
- ♦ www.sdn.sap.com
- ♦ www.service.sap.com
- ♦ www.sapfans.com
- ♦ www.asug.com
- ♦ www.sapgenie.com
- ♦ www.solutionbrowser.erp.sap.fmpmedia.com
- ♦ www.sap-press.com
- ♦ www.microsoft-sap.com
- ♦ www.duet.com
- ♦ www.oracle.com/sap

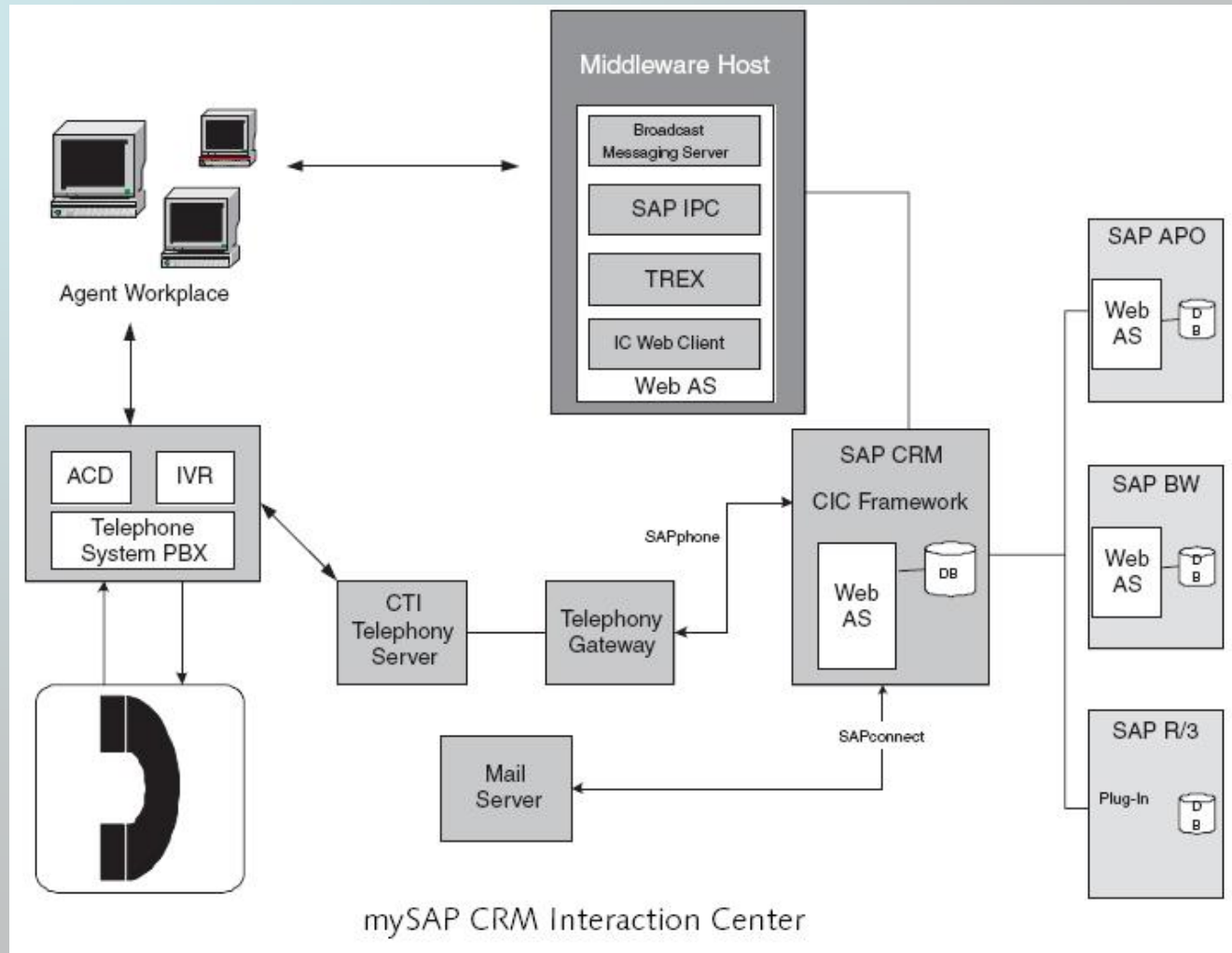


SAP example solution: Internet Sale



Source: SAP System Landscape Optimization, Andreas Schneider-Neureither [Ed.], SAP Press, <http://www.sap.com>

SAP example solution: mySAP CRM Interaction Center



Source: SAP System Landscape Optimization, Andreas Schneider-Neureither [Ed.], SAP Press, <http://www.sap.com>