Project group #1

Midway Europe E-Commerce System

Software Architecture Document

Version 1.0

Revision History

Date	Version	Description	Author
2000-12-11	Draft	Software Architecture Document generated using Wyse collage template.	Michael Björck
2000-12-19	Draft	Adding some Rational Rose diagrams	Marianne Johansson
2000-12-20	1.0	Modifying and adding relevant information.	Michael Björck Marianne Johansson

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Software Architecture Document

1. Brief Description

This Software Architecture Document provides an architectural overview of the Midway Europe E-Commerce System.

2. References

Applicable references are:

1. Vision Document V2.0
2. Glossary V2.0
3. Risk list V2.0
4. Supplementary Specification V2.0
5. Logical Network View (Hardware System Architecture Documentation)
6. Physical Network View (Hardware System Architecture Documentation)

3. Architectural Representation

This document presents the architectural as a series of views; use case view, process view, deployment view, and implementation view. These views are presented as Rose Models and use the Unified Modeling Language (UML).

4. Architectural Goals and Constraints

There are some key requirements and system constraints that have a significant bearing on the architecture. They are:

There is an existing database system that is used for book keeping and invoicing the customers at Midway. The new system uses this database for retrieving the product information such as product number and availability by checking the current stock level.

1. The system is accessed via a web user interface where the customers can use a specific logon name and a password to gain access the various pages in the system. At first the system use a graphical user interface on a local client machine to gain access for the administrators. Later on we may add administrative function via the web user interface as well. But this is not a high priority since it also makes a potential hazard since an external user can gain access to the administrative functions. The Midway Europe E-Commerce System must ensure complete protection of data from unauthorized access. All remote accesses are subject to user identification and password control.
2. The Midway Europe E-Commerce System will be implemented as an n-tier system. The clients will access the system from standard web browsers via the Internet and web server and database will be located at Midway.
3. All performance and loading requirements, as stipulated in the Vision Document and the Supplementary Specification, must be taken into consideration as the architecture is being developed.

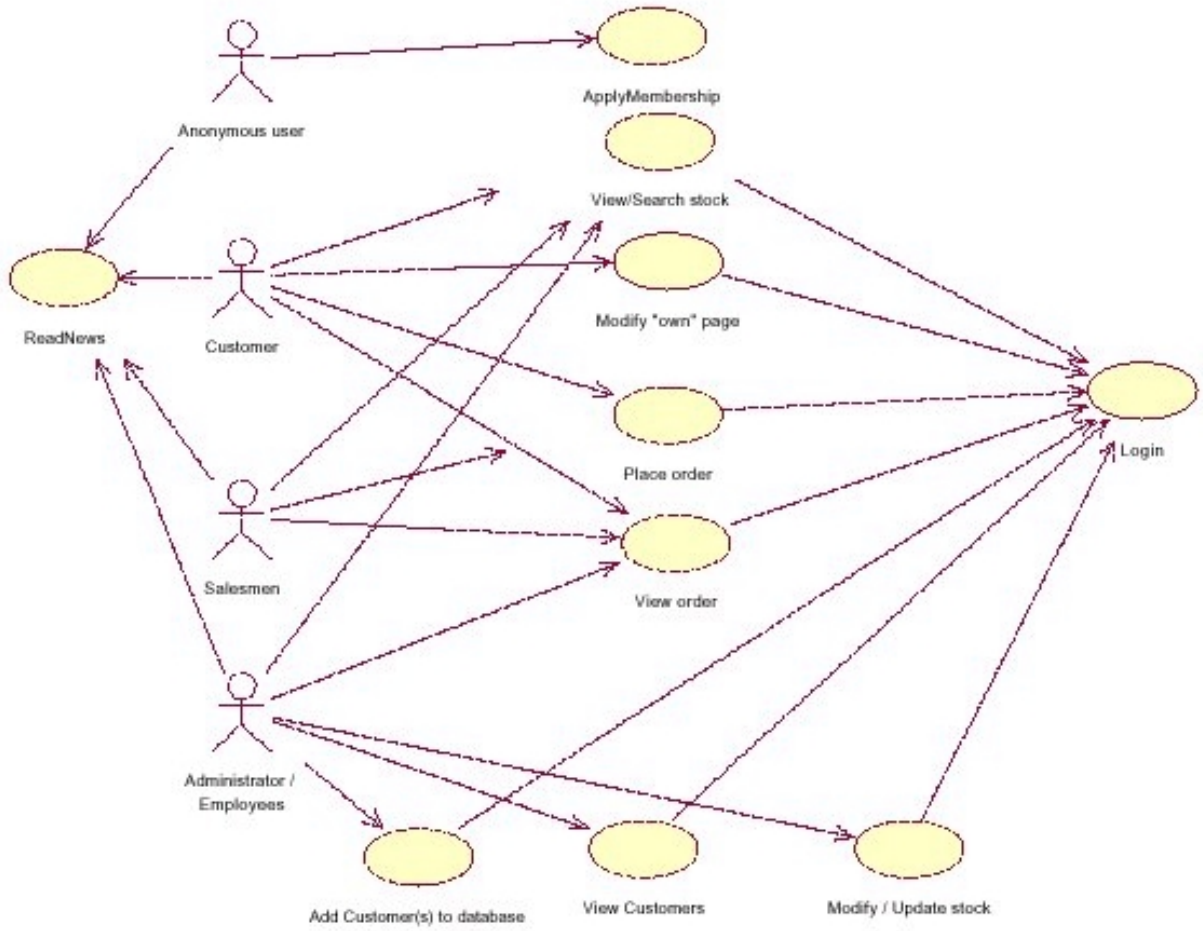
5. Use-Case View

This is a description of the use-case view of the software architecture. The Use Case View is important input to the selection of the set of scenarios and/or use-cases that are the focus of iteration. It describes the set of scenarios and/or use cases that represent some significant, central functionality. It also describes the set of scenarios and/or use cases that have a substantial architectural coverage (that exercise many architectural elements) or that stress or illustrate a specific, delicate point of the architecture.

The Midway Europe E-Commerce use cases are:

1. Login
2. Search a product by number or specification
3. Add a product to the customer cart
4. View the order
5. Delete an order-line
6. Delete the order
7. Make personal adjustments to the page
8. Logout

The customer, administrator or the promotion-customer initiates these use cases. In addition, interaction with external actor as the SPCS FoxPro database occurs.



5.1 Architecturally-Significant Use Cases

5.1.1 Login

Brief Description: This use case describes how a user logs into the Midway Europe E-Commerce System. The actors starting this use case are Customer, Administrator and Promotion customer.

5.1.2 Search a product by number or specification

Brief Description: This use case allows the customer to search for a product in the database by Midway product-number or by specification, e.g. type of cap, size, color or pattern.

5.1.3 Modify, Update Stock

Brief Description: This use case allows the administrator to update stock and modify product specifications etc.

5.1.4 Add new customer

Brief Description: This use case allows the administrator to add new customer to database and modify information of an existing customer.

5.1.5 Add a product to the customer cart

Brief Description: This use case allows the customer to add a product to the customer cart.

5.1.6 View the order

Brief Description: This use case allows the customer to view the order with all added items in a table with product-number, price and amount.

5.1.7 Delete an order-line

Brief Description: This use case allows the customer to delete an order line in the current order

5.1.8 Delete an order

Brief Description: This use case allows the customer to delete the whole current order.

5.1.9 Modify "own" page

Brief Description: This use case allows the customer to make some adjustments to the personal page like changing background color or fonts.

5.1.10 Anonymous user

Brief Description: This use case allows an anonymous user, future customer, to apply for an account at Midway Europe. The form that will be filled out is then sent to Midway automatically.

5.1.11 Logout

Brief Description: This use case allows the customer to logout from Midway Europe E-Commerce customer/administrator/promotion web site. The user will be send back to the Midway Europe E-Commerce Welcome page.

6. Logical View

This is a description of the logical view of the architecture. Describes the most important classes, their organization in service packages and subsystems, and the organization of these subsystems into layers. Also describes the most important use-case realizations, for example, the dynamic aspects of the architecture. Class diagrams may be included to illustrate the relationships between architecturally significant classes, subsystems, packages and layers.

The logical view of the Midway Europe E-Commerce System is comprised of the three main packages: User Interface, Business Services, and Database helper classes.

The User Interface Package contains classes for each of the servlets that reflect the functions that user has access to in the system. All servlets has at least one JSP page to which the servlet can redirect the user after requesting information from the lower layer and made this information available for the JSP to show.

The Business Services Package contains control classes for interfacing with the database helper classes.

The Database helper classes Package includes methods that fetches and returns information from the database.

The Database helper classes will either be solved with Java EJB technology or a specific class that handles all the access to the database.

6.1 Architecture Overview – Package and Subsystem Layering

6.1.1 User Interface

The User Interface package contains all jsp pages and servlet classes that represent the web application screens that the user sees. This layer depends upon the Business Service package and Data Base package.

6.1.2 Business Service

The Business Service package contains all Session classes that the user interface package and the database package rely on.

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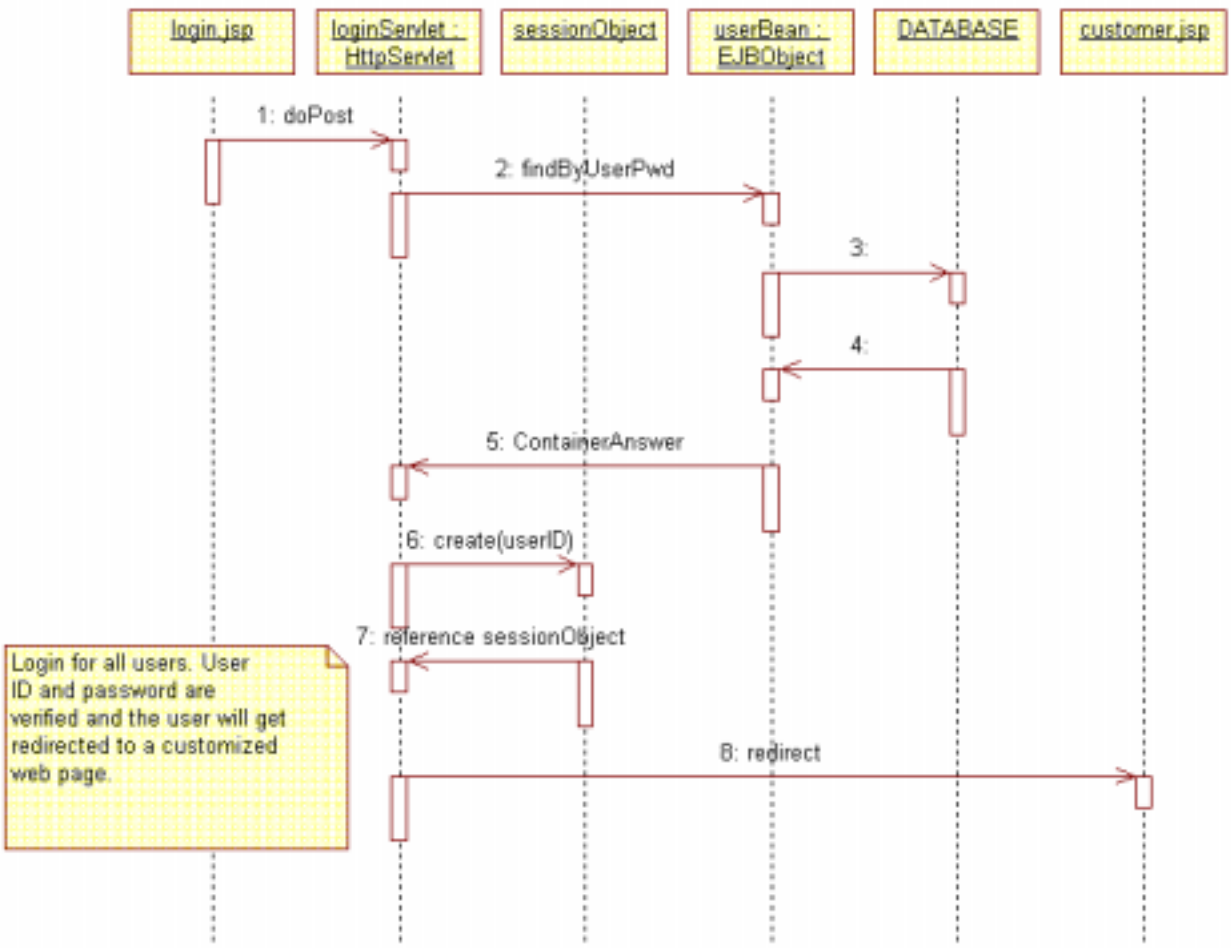
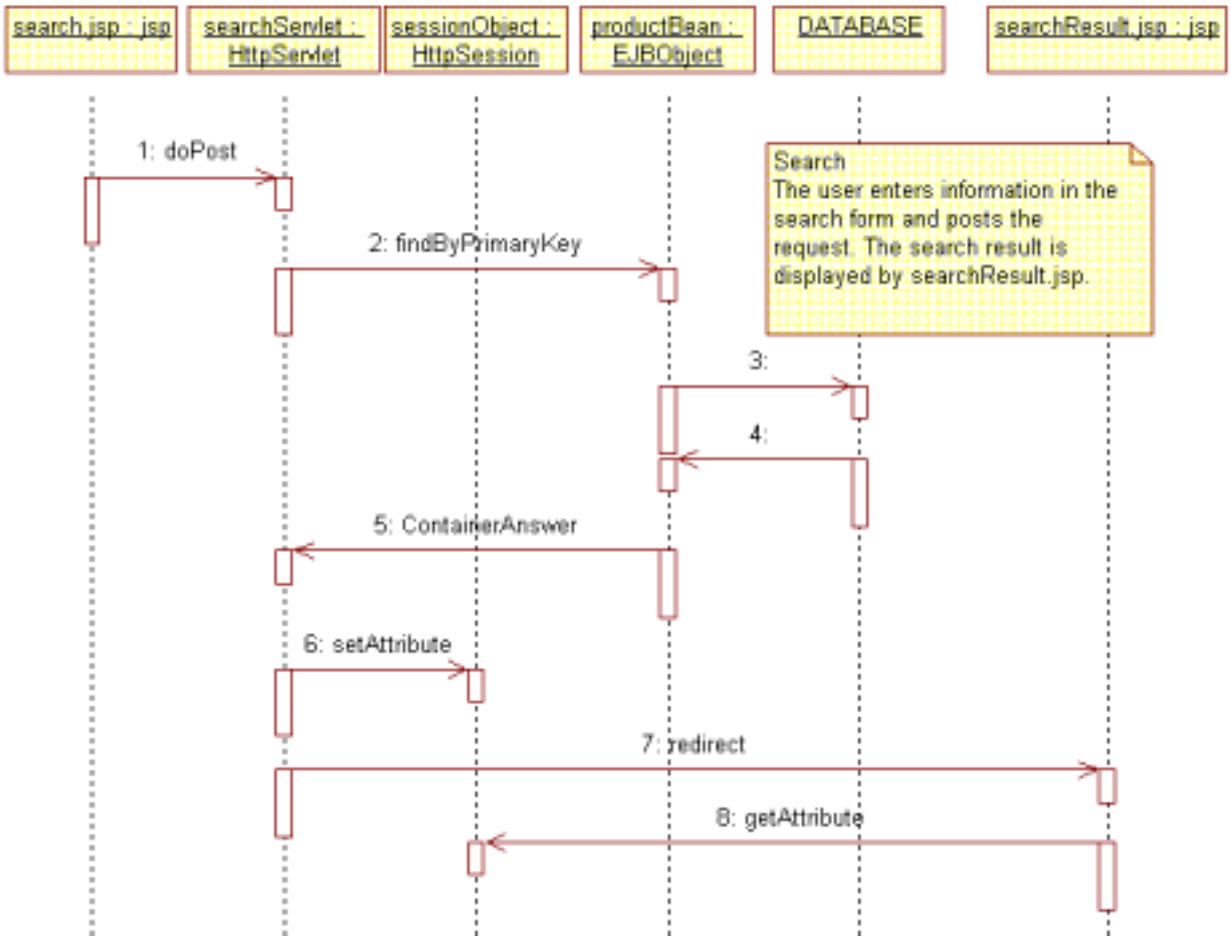
7. Process View

A description of the process view of the architecture. Describes the tasks (processes and threads) involved in the system's execution, their interactions and configurations.





8. Deployment View

A description of the deployment view of the architecture Describes the various physical nodes for the most typical platform configurations. Also describes the allocation of tasks (from the Process View) to the physical nodes.

For details refer to Logical Network View (Hardware System Architecture Documentation)[6] and Physical Network View (Hardware System Architecture Documentation)[7].

9. Size and Performance

The chosen software architecture supports the key sizing and timing requirements, as stipulated in the Supplementary Specification [4]:

1. The system shall support up to 500 simultaneous users against the central database at any given time, and up to 10 simultaneous users against the local servers at any one time.
2. The system shall provide access to the legacy SPCS FoxPro database for mapping.
3. The client portion shall require a standard web browser as Internet Explorer.

The selected architecture supports the sizing and timing requirements through the implementation of a client-server architecture. The client portion is implemented on local PCs at Midway Europe or PCs with Internet access.

10. Quality

The software architecture supports the quality requirements, as stipulated in the Supplementary Specification [4]:

1. The desktop user-interface is a WUI (web user interface) which uses standard web browser as Internet Explorer.
2. The user interface of the E-Commerce System shall be designed for ease-of-use and shall be appropriate for a computer-literate user community with no additional training on the System.
3. Each feature of the E-Commerce System shall have built-in online help for the user. Online Help shall include step by step instructions on using the System. Online Help shall include definitions for terms and acronyms.
4. The E-Commerce System shall be available 24 hours a day, 7 days a week, with a minimum of downtime.
5. All software upgrades are done on the server. The user will always have the latest version when logged in.