Architectural Case: AMF Pension

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1 Introduction

This document describes the integration architecture used by AMF Pension to provide web services to external customers. It is based on a presentation by Christer Sandin on 2004-04-21. The document will highlight the most important problems and their solution.

1.1 Problem overview

AMF Pension manages pension funds for 2.4 million customers. The total asset value is around 200 billion SEK. It is owned by LO and Svenskt Näringsliv with 50% each. The administration of pension fees etc. is outsourced to another company, FORA. This means the AMF can run its business with around 150 employees.

AMF has recently changed from being a relatively anonymous company with a restricted customer basis to a public and recognized player on the pension market. This has meant that the requirements on IT support has changed considerably over the last 2-3 years. Some of the driving forces are new products and services, external partners, laws and regulations, and improved cost and efficiency.

Many of these requirements translate to increased system cooperation. Introducing a new product will require cooperation with 2-3 systems Likewise does external partnership lead to integration requirements. This integration will be achieved partly by using web services.

1.2 Several integration development phases

AMF Pension has planned a gradual transition to an hub-based integration architecture also utilizing web services. On the way several intermediate solutions will be used. Four examples were described in the presentation.

B2B solution

The first example is a B2B solution providing pension brokers with basic services like new insurances, changing premiums, and fond changes. This is a transactional interface with B2B servers built with Java and Web Sphere.

Customer engagements

The second example concerns services that provide an overview of customer engagements. This requires access to several background systems. An integration hub utilizes a common customer data base with pointers to individual systems for each customer to direct requests to individual back end systems.

Common information model

As many observers have noted a successful system integration will require a common information model. AMF Pension have done their homework and built what they call a “common transport and information model”. The result is an XML based logical data model which is accessed from the integration hub. It is used for message transformation and routing.

Common computational components

A further step in system consolidation is to identify computations common to several systems. Computations in individual systems will be replaced by common modules which will ensure that different systems reply with the same answer to the same request. The computational modules will form a separate three tier platform accessible via a Web Sphere Java component.

The pension portal

The pension portal will give access to services provided by many pension insurance companies. It is planned to be available during 2004. Initially AMF is providing the portal services to a limited set of customers.

2 The integration architecture models

The integration architectural vision of AMF Pension is to establish an integration hub with asynchronous message based connections to front and back en systems. The technical platform will mainly be Web Sphere and Java. The integration hub will have access to a data base with common data. See figure 1.

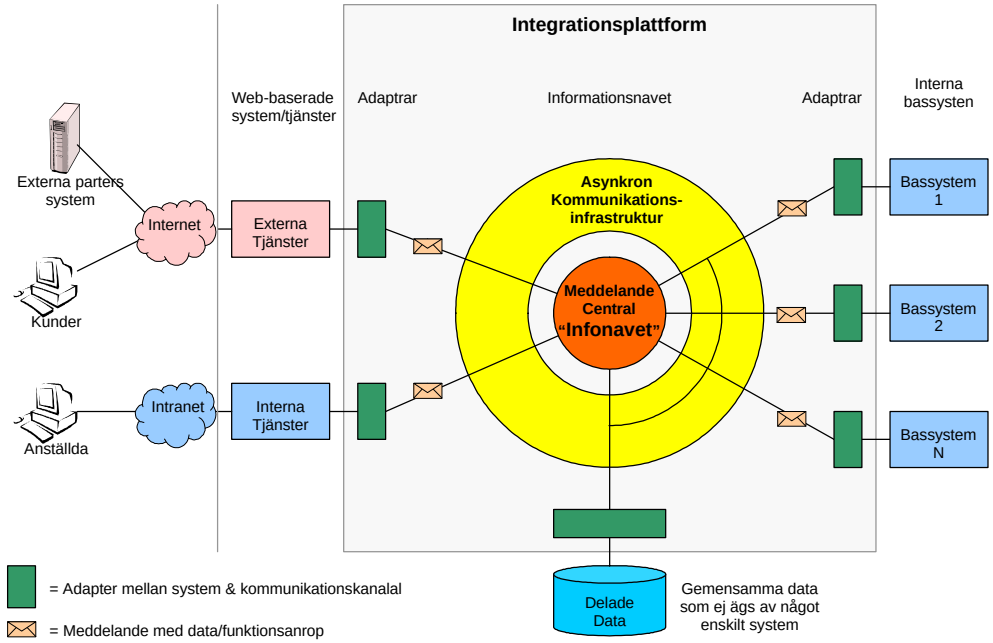

Figure 1, The integration hub architecture

2.1 B2B services

The B2B solution offers a transaction oriented interface to both pension broker companies and larger customer companies. The idea is to make a set of basic administrative services available to selected customers. The structure of the B2B solution is shown in fig. 2. The B2B servers communicate via http and SOAP. The content and structure of the SOAP messages conforms to the MIS Life XML standard for insurance e transactions. Note that there is a local data base connected to the integration hub that holds the status of the service request. Each external request is broken up in smaller parts which are distributed to the corresponding back end systems. The hub coordinates and collects the result.

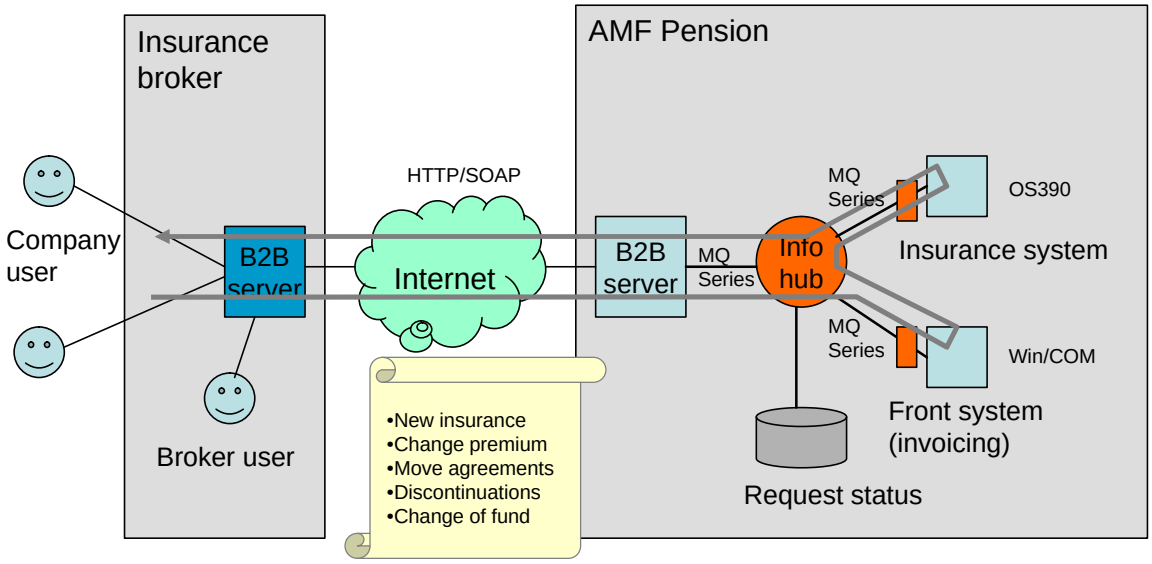

Figure 2, The B2B solution

2.2 Extended integration hub

In order to offer services via varying channels, both internal and external, the integration model has to be more sophisticated than the previous B2B solution. The next step is therefore to expand the information hub in fig. 2. As shown in fig. 3 the request status data base is enhanced with two new databases. One holds common customer data and the other holds the data model together with transformation and routing data. The common customer data base only holds basic data common to all systems such as name and address. For each pension customer there are pointers to all individual systems where the customer is involved and where more specific data can be found. Fig. 3 shows possible channels that connect to the hub. It represents a future vision since not all of these are implemented.

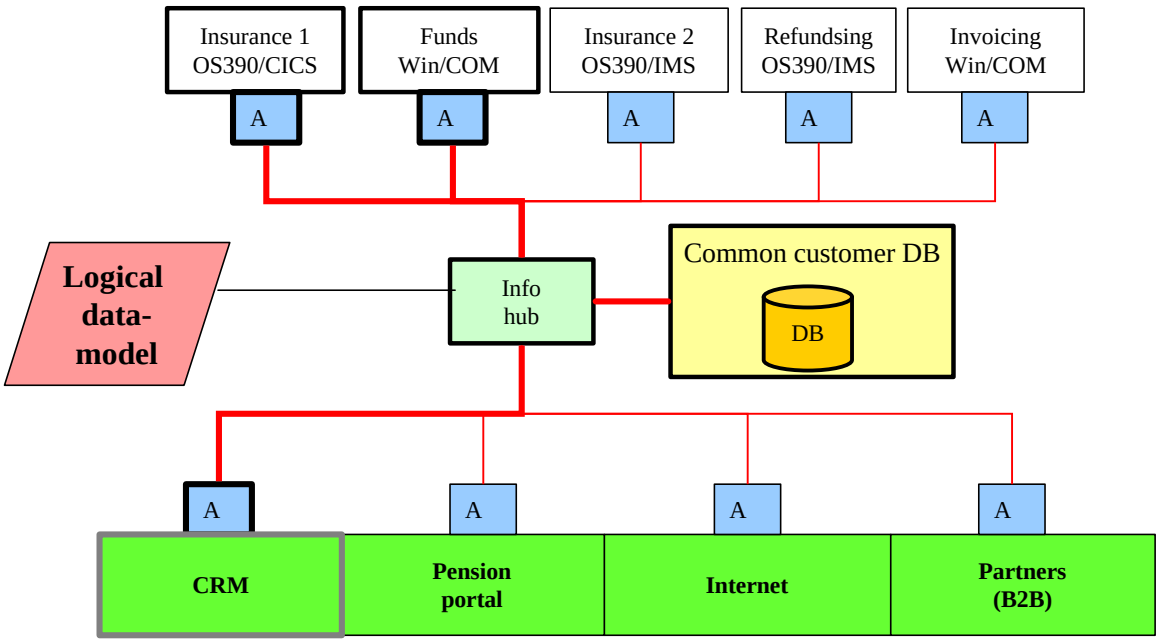

Figure 3, The extended integration hub

2.3 Common computation platform

Many insurance transactions require complicated computations. The same type of computation may be implemented in several systems sometimes resulting in small but notable differences in the returned result. The idea with the common computation platform is to collect such computations in a set of common modules called the “Computational Platform”. The Computational Platform, as shown in fig. 4, will offer services to different channels.

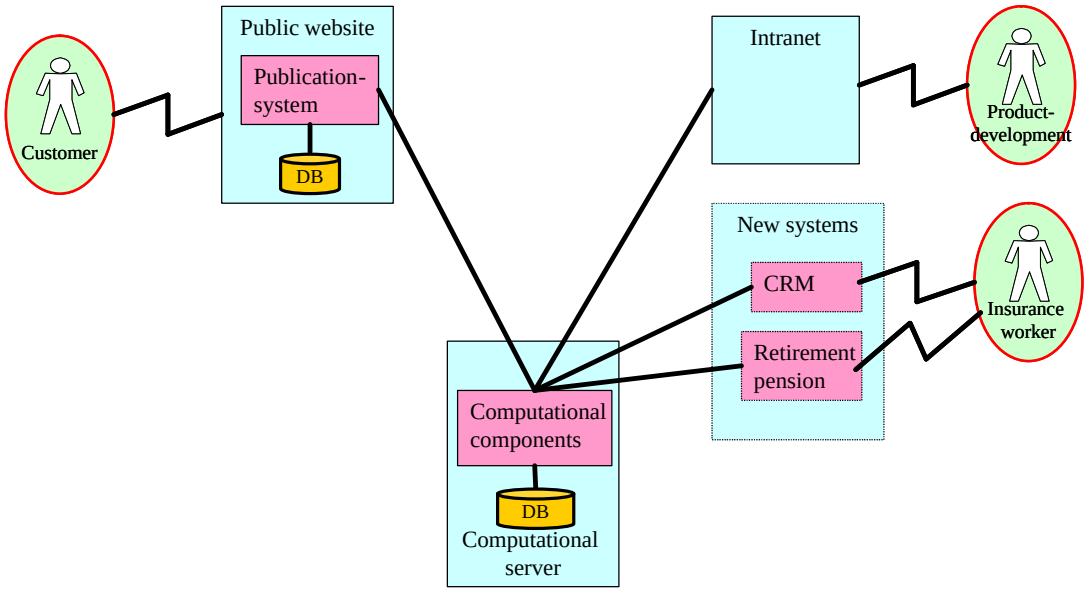

Figure 4, The computational server

One view of such an architecture, with a public interface, is shown in fig 5. Also shown in this figure is the break up into basic and combined computations resulting in a layered module structure in the platform. The module Capitex is a commercially available computational system. The Web Sphere tier will channel service requests to the computational tier. A more technical view of the same setup is shown in fig 6. The externally acquired product Capitex runs on a BEA platform and is accessed via a C# interface.

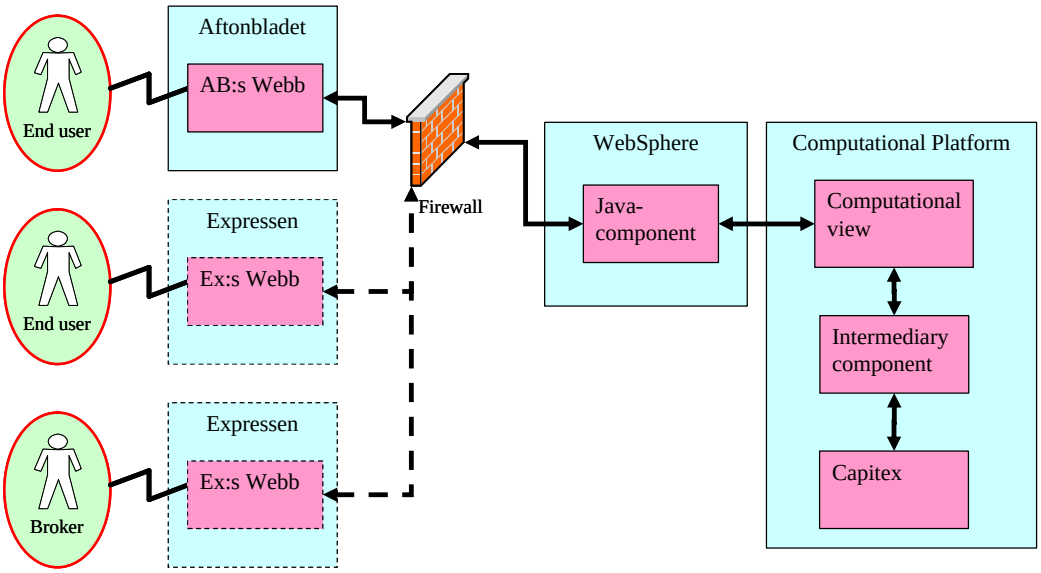

Figure 5, The external web service offering

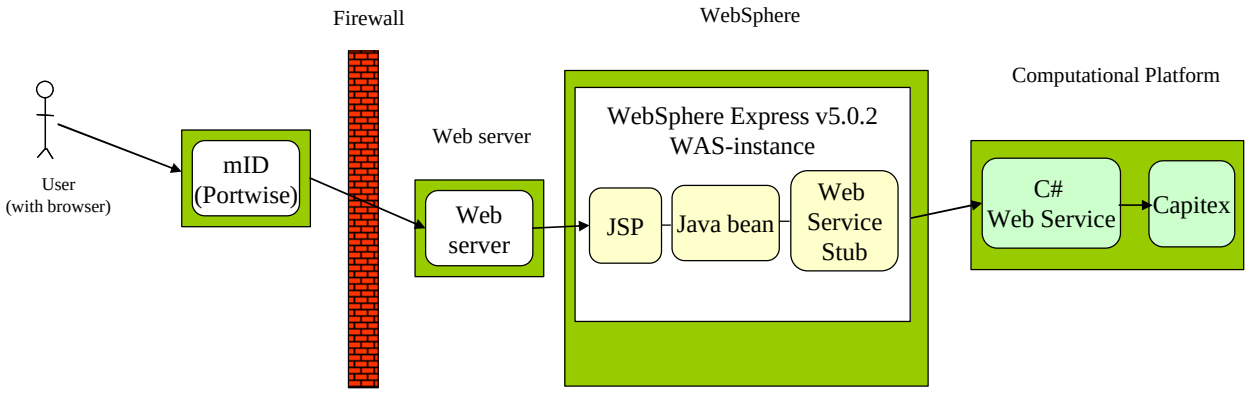

Figure 6, The technical view of the end-to-end connections

Security will of course increase in importance as the Pension Portal comes into play. AMF Pension plans to use the SSEK standard for their external security implementation. Also see the SEB architecture documentation (Henkel).

2.4 Communication

The communication between the components in the AMF architecture is mainly asynchronous. The MQ-Series based information hub with its support for asynchronous messaging encourages this solution.

2.5 Summary

The introduction of an integration hub and web services as described in this document can be seen as a good example of a gradual architecture transformation.

Lessons learned are that it helps to employ architectural and technical expertise and that it is a good policy to develop the solutions incrementally.

3 References

Sandin C. AMF Pensions satsning på Integration och WebServices. OH presentation, 2004

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