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APM

Architecture of the ANSA Information Space

Mark Madsen

Abstract

The ANSA Project generates large quantities of valuable information in a variety of disparate forms. This document identifies those forms of informational object, categorises them on the basis of their role in the ANSA Project, and classifies them in terms of their business value characteristics.

The technical challenge arising from the classification of information objects is to manage the information they contain in a coherent fashion and under the umbrella of a common strategy. This poses interesting problems because much of the informational value is contained in forms that are not well managed as formal documents. Examples are WWW pages, email archives, and source code.

The solution to these problems is to develop a modular informational architecture that takes into account the diverse management needs of the various forms of information that are handled within the ANSA Project. Direct benefits of such an architectural framework are firstly the coherent management of diverse forms of information, thus aiding the running of the ANSA Project, and secondly the development of prototype information and metainformation services within the research areas of the Information Services Framework.

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1 Motivation

The ANSA Project generates large quantities of valuable information in a variety of disparate forms. This document identifies those forms of informational object, categorises them on the basis of their role in the ANSA Project, and classifies them in terms of their business value characteristics.

The technical challenge arising from the classification of information objects is to manage the information they contain in a coherent fashion and under the umbrella of a common strategy. This poses interesting problems because much of the informational value is contained in forms that are not well managed as formal documents. Examples are WWW pages, email archives, and source code.

The solution to these problems is to develop a modular informational architecture that takes into account the diverse management needs of the various forms of information that are handled within the ANSA Project. Direct benefits of such an architectural framework are firstly the coherent management of diverse forms of information, thus aiding the running of the ANSA Project, and secondly the development of prototype information and metainformation services within the research areas of the Information Services Framework.

The principal motivations for pursuing this work at the present are the subjects of the following sections.

The motivations for approaching the problem from the architectural point of view are the usual ones: in this case, the prime reason is that although the situation which we are considering is a specific one, the lessons learned from this study can have wider application through use of the architectural principles derived in its course.

1.1 Effectiveness

The internal goal of beginning this exercise is to contribute to the effectiveness of the business of the ANSA Project in the short, medium, and long terms. The short term goals are expected to be furthered by the research value resulting from this work — see §1.4. The medium term goals of the project will be furthered by the development of prototypes using the architectural framework developed here as a basis, and by the immediate benefits arising from better access to requisite project information. In the long term, the project will benefit mainly from the amount of time and effort saved by deployment of more sophisticated strategies for dealing with business information. Particular benefit is expected to derive from support for precise quality management, as described below.

1.2 Stabilisation

A more sophisticated information management framework would be longer-lived than current arrangements, mainly through providing better integration of new information object types and origins with the formal documents recognised by the existing Document Manager.

1.3 Warehousing

Surveys show that much of the information used in the everyday business of most companies is informal or ephemeral information, such as email. Such information is, by its nature, not archived or indexed, and tends to be accessible only by individuals or small groups. Often, such information would be of value to the work of other people within the company, if only they had some means of locating and accessing it, or at least of learning of its existence.

1.4 Research Value

The research value from developing an information architecture that can be extracted to the benefit of the ANSA Project can be predicted to fall under the following headings.

1.4.1 Architectural compatibility with ANSA

The design phase of the study will reveal any inadequacies present in the ANSA model with regard to information management. Likewise, it will also reveal inadequacies of present models of information management from the point of view of architectures for open distributed systems.

1.4.2 Models of information and metadata

The specification phase of the study will result in a suite of robust, general, and adaptable models for the informational objects and metadata objects required in order to make the management system function effectively and efficiently.

1.4.3 Object and service prototypes

The implementation phase of the work will produce a variety of prototype components capable of interworking with most of the standard information technologies presently in use within the ANSA Project and its sponsors.

1.5 Quality Management

The management of information resources so that they are placed at appropriate levels of quality for the requirements that will be placed upon them is a major benefit of an overall information management framework. The examples of documents or code that are of too low quality are obvious, but equally wasteful is the imposition of high quality standards upon noncritical resources. In a finite-resource environment, quality must be placed in the areas which will be of most benefit to the furtherance of the business and research aims of APM the ANSA Project.

2 Requirements

This chapter captures and analyses the requirements on the architecture of an information management system capable of solving the problems set out in Chapter §1. Requirements corresponding to facilities present in the existing document manager are not treated in this chapter. They can be found in the documents describing APM document support.

2.1 Requirements Capture

The requirements capture process was initiated with an informal exercise. This is described below, along with a formal requirements list resulting from that exercise.

2.1.1 Informal requirements capture exercise

The informal requirements were captured by generating a “wish list” containing the desired end-user functionality that was wanted from the implemented system. The wish list is as follows:

1. General access to all information ever produced by ANSA and APM.
2. The APM Document System to be a fully integrated information source.
3. Access independent of creation technology (wordprocessor, editor etc).
4. Logically centralised information store.
5. Full range of re-use capabilities (eg, cut-and-paste between arbitrary documents).
6. Access and use from any platform, whether past, present or future.
7. Complete customisable indexing facilities available at time of creation, with auto-indexing on the basis of key information listings.
8. Flexible search/retrieve facilities, with smooth narrow/widen behaviour for searches.
9. Support for quality management (eg, source indications on search results).

Clearly, points 1 and 2 are related to issues of *integration* — in particular, point 2 is a *federation* requirement. Points 3-6 are *transparency* requirements, while points 7-9 are requirements on the *management* of the system, or alternatively, on the kinds of *metadata* which are required to be maintained and generated within the system.

2.1.2 Formal requirements capture exercise

The formal requirements upon the proposed ANSA information management architecture are obtained by combining precise statements derived from the informal requirements with the constraints that can be derived from the previous chapter.

2.2 Requirements Analysis

The process of requirements analysis is here carried out so as to inject the formal requirements already captured into the design process. In order to do this, they need to be separated out into completely orthogonal requirements and prioritised, so that the design architecture can be of the layered modular form (this is in the nature of an extra overall requirement). This will allow both the specification and implementation in their turn to be staged, so that the project can use effort resources within the ANSA ISF Group and related projects as and when it becomes available.

The principal results of the informal requirements capture are the need for

2.2.1 Integration

The system must be capable of integrating documents produced using different document preparation platforms and environments.

2.2.2 Federation

2.2.3 Transparency

2.2.4 Metadata

2.2.5 Management

3 Design

3.1 Overview

4 Specification

4.1 Overview

5 Implementation

5.1 Overview

5.1.1 The business problem

5.1.2 The technical problem

5.1.3 The solution

5.2 Figures and Tables to copy

Copy the whole of this figure, it is a frame inside a table and you need all of it. Do **not** copy a figure or table which has already been cross-referenced, the references will become ambiguous and cause you great problems.

Figure 5.1: This is a figure

```
x=1;  
/* (FigCode) */
```

Text in a figure (FigText)
Has different paragraph spacing.

Table 5.1: This is a table

5.3 Section about text and editorials

Note: Editorial paragraph
Text Paragraph

5.3.1 Subsection about Bullets

A text bullet containing a footnote reference¹.

This is a text sub bullet.

- Bullet
 - a sub bullet

5.3.1.1 Subsubsection about numbered bullets

1. first numbered bullet
 - (i) first numbered sub bullet
 - (ii) next numbered sub bullet
2. next numbered bullet

code para

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1. This is the footnote.

References

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