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Background and vision

This chapter gives the background to FMV Grund-DTD by describing the visions of FMV CALS Office for future information handling.

Contents

CALS within the Swedish defence

The Swedish Defence's view of CALS is focused on information, and basic information processes.

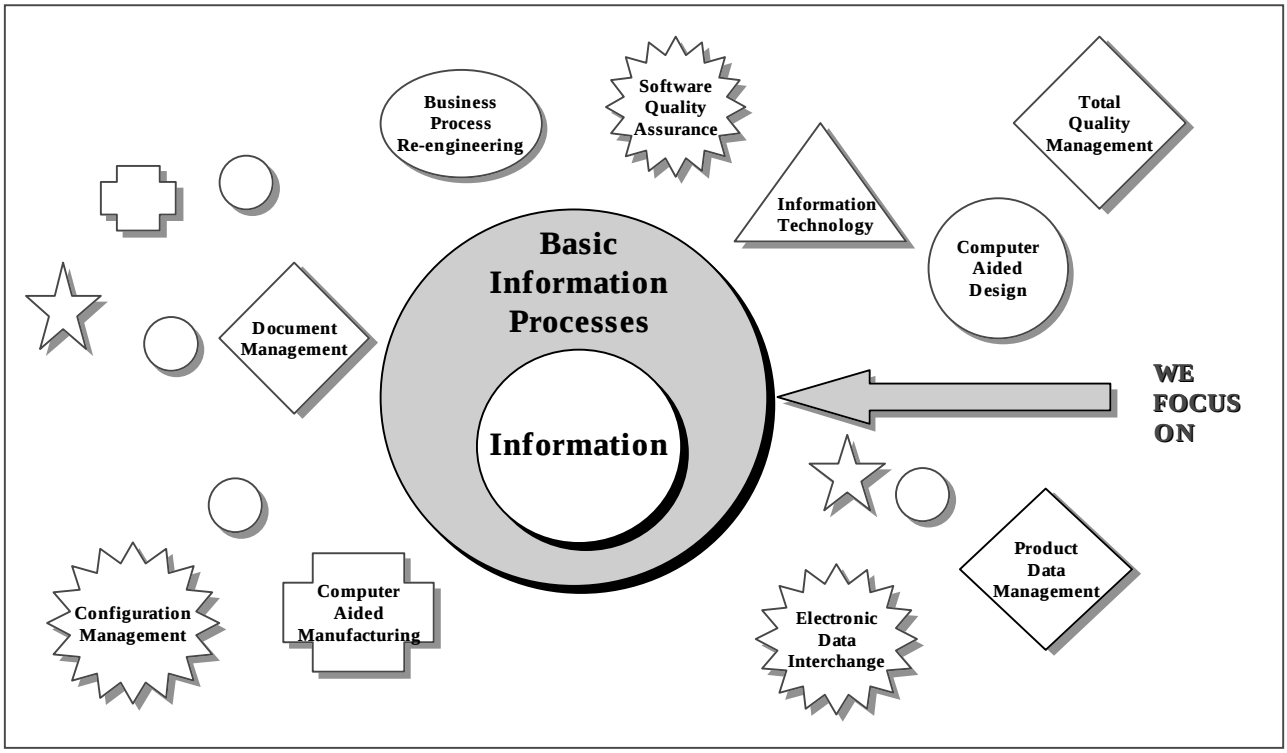

Figure 1. Focus of CALS

The purpose of CALS is to standardise information using unified representation and structure of text, graphics, video, audio, links, terminology, geometry/topology, component identification, dates, process information like maintenance- and fault-finding procedures, etc.

The basic information processes control and manage the handling of information, which requires support for production, transfer, storage, search, retrieval, administration, verification/validation, access control, audit, distribution, packaging, etc.

From this follows that CALS should be more focused on the content of information than the appearance of information. Traditionally CALS has been the driver for new ways of structuring documentation - but today we see documents as an information product or a packaged view on already stored information.

CALS must also be a facilitator or catalyst for change. With a standardised representation and structure of information, we will have the opportunity to change our business and information processes.

Product models

The early description of CALS included a Phase 1 (transfer of information) and a Phase 2 (integrated information). FMV CALS Office regard the process of CALS implementation as being more complex.

CALS within the Swedish defence is aiming at a **product model**, where users can find all information for a materiel system. A product model that contains the total and unified information required to support users working with studies, specifications (requirements), analyses, logistics, design, manufacturing, maintenance, operation, modification and support.

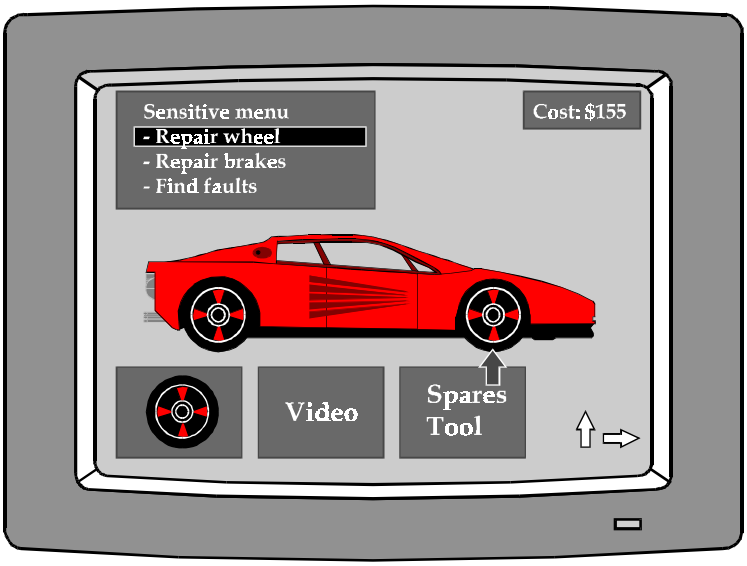

Figure 2. The product model vision

The information will be integrated, separated from applications (independent of hardware and software) and connected to its context. Product models are object oriented and built to reflect the reality, e.g. the geometry/topology part of a product model reflects the actual physical appearance of a materiel system.

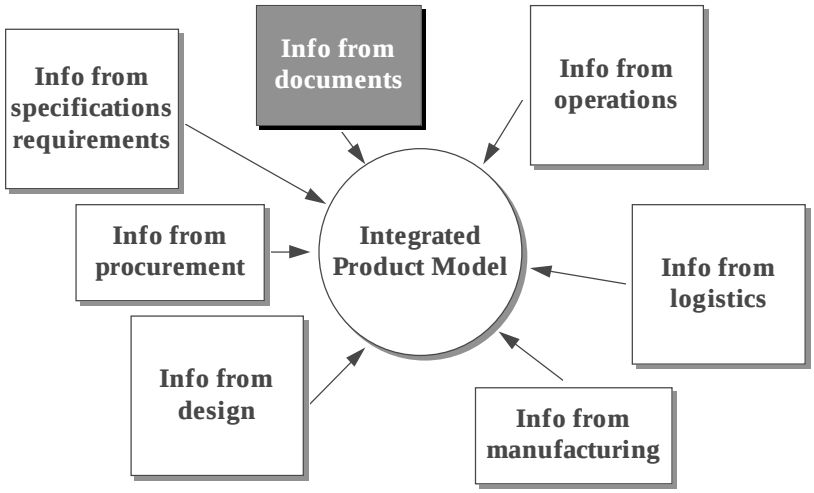

Figure 3. Integrated information is a necessity in order to establish a product model

The FMV approach to product models contains a "core", which defines objects, relations, associations, core entities and attributes (e.g. identifications, characteristics, instantiations and classifications). Connected to the "core" are a number of "satellite" models, which define, represent and structure information for requirements, specifications, logistics, operation, maintenance, support, training, visual appearance (geometry/topology), etc, as well as presentation engines.

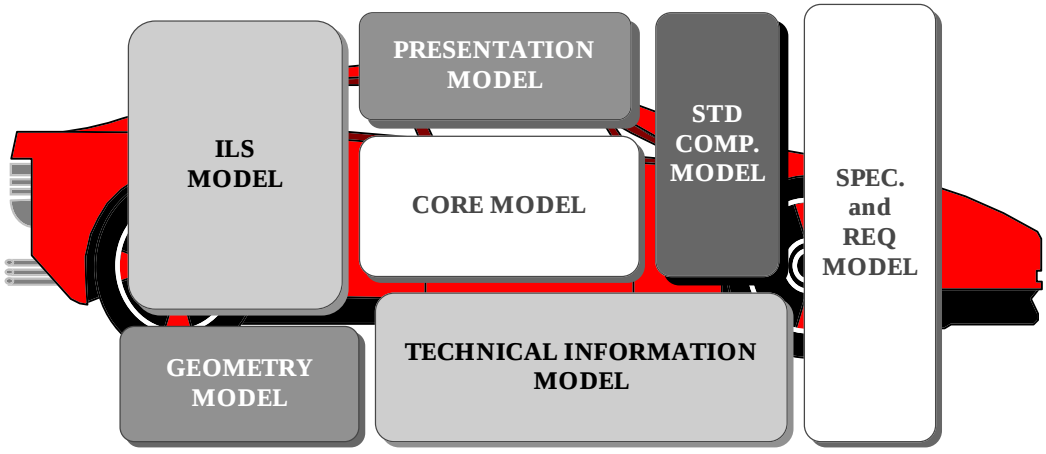

Figure 4. The product model

This process has more than two steps, and the steps differs depending on the type of information and the legacy status. The CALS programme within FMV defines the technical goal – product models – and the steps needed to go from today's legacy to a fully integrated product model architecture. It also suggests changes to our existing information management, and support us in our change processes.

Information legacy

Within the Swedish defence there are approximately 750 different approved and legal types of technical publications and documents describing a large number of materiel systems. Many of these types has generated their own information processes, which gives us an estimate of 5000 rules and regulations, in total.

During decades, documents have been produced by hand, on type-writers and on all kinds of computers (hardware and software). Therefore we have today almost an infinitive number of variations in the way information is available and managed.

The whole purpose of CALS is to reduce the number of variations.

Technical publications is the largest legacy problem (85% of the total information legacy). Information from logistics, quality, requirements (specifications), design and manufacturing are more structured and therefore easier to convert.

New perspective on technical information

The problems found in the technical publications legacy are numerous. Over time, FMV have spent efforts in implementing new archiving systems, building DTD´s for documents, standardising document layouts (style sheets), using the same type of editors, acquiring digitised storage-facilities, creating new numbering systems, developing document management systems, and so on. These activities have resulted in even more variations than before.

To break the trend, a new perspective on information is needed. If we are still working with the traditional "document" concept, where a document is one way of presenting the information (i.e. an information product), we will end up with a large number of DTD's for different types of information products, each creating a new variant and adding to the legacy problem.

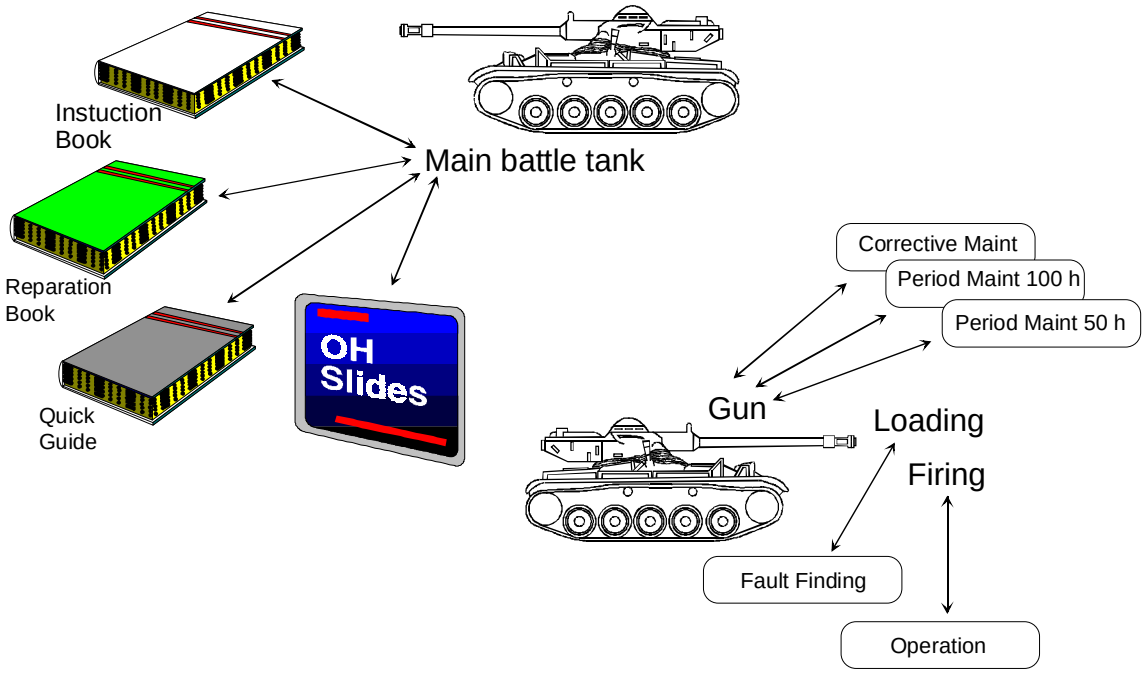

Figure 5. We need a new perspective on technical information

What's needed is a solution that spring from a vision of how to manage the total information for a materiel system. The solution must be stable and generic, i.e. it should be possible to use the same structures for different business processes and different products (ships, vehicles, air planes, etc.). It is furthermore important to avoid duplication of information and instead encourage re-use of information.

FMV Grund-DTD is designed and developed from this perspective, with a very content oriented structure of information, that is modularised in order to fit in with a future object oriented product model.

Strategy for technical publications legacy

The strategy for moving technical information from today's legacy to a future integration in a product model could be described as follows.

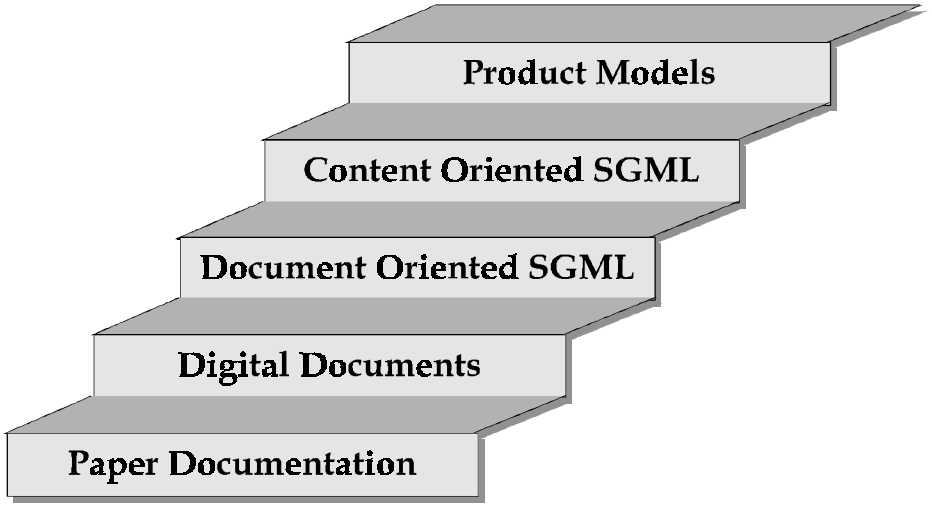

Figure 6. Refining the document legacy

1. The paper legacy needs to be reduced (redundant and out-of-date), digitised and stored in a digital form for efficient document management. In other words, we convert the paper legacy to...
2. The digitised legacy, which needs to be reduced (redundant and out-of-date) and converted to traditional SGML (document oriented DTD's). In other words, we convert the digitised legacy to...
3. The SGML legacy, which needs to be reduced (redundant and out-of-date) and converted to content oriented SGML (FMV Grund-DTD). In other words, we convert the SGML legacy to...
4. The content oriented legacy, which might need to be reduced (redundant and out-of-date), and incorporated into a product model.
5. The product model, which contains all information necessary for a user to understand and perform his tasks. The product model needs also be kept up-to-date and managed, but the variants are kept to a minimum.

Note: It is of course possible to jump a step in this ladder, and procurement can address any step even if the higher steps are recommended. All depends on project requirements and possibilities.

Production and presentation with FMV Grund-DTD

The new perspective on information will of course affect the production and management of information and information products. It is important to understand the mechanics in this.

Technical authors will not write "documents" anymore. They will produce small, discrete modules of information and connect them to objects (physical "components" or functions) within a materiel system.

In order to produce an information product (e.g. a traditional paper document, an on-line presentation, or a computer based training application), the information modules must be arranged and "glued together" in order to accomplish the structure of that particular information product. This is done by a technical author or editor by defining and creating an information product module, which is associated with some processing, e.g. format specifications (further information on information product modules are found later in this document).

If we compare this production model with the traditional production of documents, we see that the production has been divided in two parts. First, the information as such is produced as information modules, bound to an object. Thereafter an information product is "assembled" upon request from e.g. a customer, using the information modules. Each of these requires information analyses to ensure the quality.

The obvious benefit of producing and manage information in this way is of course the potential of integrated information in a future product model.

But, it is even more. Just by concentrating on content instead of appearance, contractors and customers will have an opportunity to control more aspects of the information. Methods for information analyses may be more generic and automated, interfaces to other types of information (e.g. from specification, procurement, logistics, design and manufacturing) can be clearly defined due to the common object oriented perspective.

Only imagination sets the limits to how we will handle information tomorrow.