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IRMA
Information Resource Management Architecture

A data-driven method used in planning the overall system architecture

by
Eskil Swende

IRM Consult AB, Bromma, Sweden

A rapid development is presently underway, where a company's ability to compete is becoming directly dependent upon the effective use of information technology.

The internal organization is becoming more decentralized, and because of this, important information must be available to all employees.

This places new demands on the direct commitment of top management in handling the critical resource, information, and how it is to be processed.

This article illustrates this development and describes how a "city plan" for a company's data processing can be created.

• Drastic changes in several branches

The airline industry

In the United States, American Airlines has built up a sale's support system, with the help of EDP. It is so effective that competitors are now forced to turn to American Airlines to sell their products.

This is naturally embarrassing for competitors and makes their sales expensive and ineffective. American Airlines, of course, gives priority to their own products and charges highly when selling competitors' products. During the past fiscal year, American Airlines made more money selling their EDP services than they did from their own flying operation.

From this perspective it is easier to understand the Amadeus project, a collaboration between SAS, Lufthansa, Air France and Iberia. The outside threat from effective support systems can cause angry competitors to cooperate together in trying to avoid the situation of the American airline companies. Such investments can cost millions of dollars, and the individual airline companies do not consider themselves capable of carrying these investments of their own.

The insurance field

When WASA introduced its new product, Reflex, in the spring, the large competitors reacted with an uproar. Reflex, in short, is designed so that the size of a pension insurance can be decided upon at a later time, when the insured person knows how much extra money he has. Previously, a pension insurance involved a very long-term and inflexible commitment.

The product, however, places completely new demands on the EDP systems, and competitors were not able to immediately duplicate the product. For example, it was a year before Skandia could launch its product, Balans.

Banks

Question: Which Swedish Bank makes most money on Currency Exchange Trade?

Answer: Most likely no bank, but rather Reuter, the company behind the EDP system that the banks use in their trading.

Reuter has been able to attain a monopoly in Sweden and can regulate its prices accordingly. Other companies have great difficulties in competing. Reuter has created obstacles by committing their customers through long-term contracts.

The Auto Industry

In *Ledarskap,* December 1987, Volvo reported that it needed seven years to develop a new car model, when Honda accomplished this in four. The company that wishes to win the next round must utilize information technology more effectively. This cannot occur without the direct commitment of top management.

Throughout all manufacturing industries, the lifespan of products is becoming shorter. To ensure profit, it is becoming all the more important for companies to be first with new products.

• Information technology influences the organization

Not only development within business is greatly influenced by technology; extensive changes within the organization of the company are also necessary.

Peter F Drucker, "still going strong", has described these changes in a brilliant article in the *Harvard business Review,* Jan/Feb 1988 called "The Coming of the New Organization." He is of the opinion that a major part of middle-management will disappear in the next few years. He compares a large company to a symphony orchestra. The conductor in an orchestra can direct 300 musicians without any middle management levels. Everyone works at the same level and each and everyone is an expert in his own field.

His opinions are shared by Jan Carlzon who has made great efforts with his "second wave" project to level out the SAS organization. Carlzon feels that "no one who has access to information can avoid responsibility."

This brings us to the purpose of city planning.

A "city plan" is the collective basis on which to build a new infrastructure for data processing within a business. The infrastructure should be such that it makes information accessible and supports business development.

• City Planning within our society

If a comparison is made with our industrial society, we have built up both methods and decision processes to govern how a satisfactory infrastructure should be constructed.

City Planning is the process by which we try to plan the construction of society on a long term basis. We plan, for example, where our highways, railways, and bridges should be built, where airports whould be situated, which areas should be set aside for industry and housing; how energy is to be supplied.

Sometimes we have extremely divergent opinions concerning how the plans should be designed and when they should be put into effect.

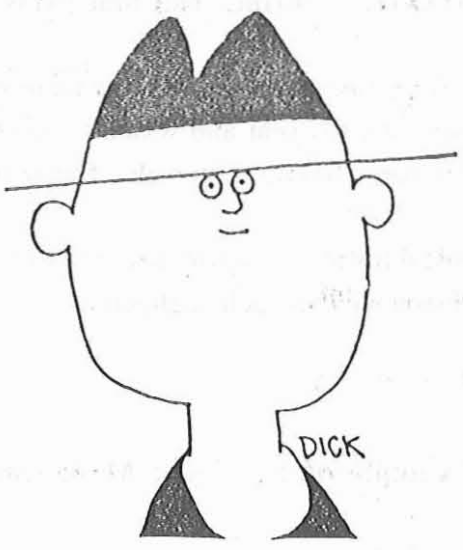
But no one questions the fact that we do plan.

- **Create a city plan for information in your company**

Coordinated Planning Prohibited

After the fiasco of the "total system concept" in the 1960's due to underdeveloped technology and faulty methodology, coordinated planning of data processing has basically been non-existent in most companies.

EDP departments have been forced to give their users the systems they order without co-ordinating these with the needs of other users.



BEFORE YOU FIND YOUR WAY, YOU HAVE TO GET LOST

A House in the Middle of the Highway.

How can things have gone so wrong?

Let us once again draw a parallel with society. A building contractor who builds a poorly constructed house that starts to mold after several years is criticized for this, and rightly so.

The builder, however, cannot be criticized for the fact that the following year a highway is to be built in the same location as the house. This, instead, is poor city planning.

The same is true of data systems. The fact that the EDP department constructs poor systems, difficult to use, is often criticism that is well justified. A programming department, however, cannot be criticized for building systems that are not well coordinated, especially as many EDP departments have been incorporated into their companies with the task of being profitable in competition with external computer companies.

No one is Responsible for Information as a Resource

Question: Who, is then responsible for the planning of information processing and for coordinating it so that no houses are built in the middle of the highway?

Answer: No one. This function is missing in most companies.

Information, an extremely crucial resource for business, which costs milions of dollars to process each year and which is becoming more and more important for the future of a company, has no responsible function.

Just think if a company treated other resources such as money, materials, machinery, or personnel with such negligence.

Example of Negligent Management

An important part of resource management is to acquire resources for the business. For this, the administration has supplied directives for how most of the resources (money, personnel, materials, machines) should be obtained. On the other hand, no directives are given for how the resource, information, should be acquired.

Information, as a resource, is unique in one important aspect. It is **not consumed** when used. The same information can be used over and over again. Because information is not consumed, it only needs to be acquired once. Nevertheless, it is accepted that the same data (data about customers, products, personnel, for example) can be acquired several times.

Obviously, obtaining the same information several times is an unnecessary expense and also reduces the quality of the stored resource.

The Spaghetti Syndrome

Another consequence of insufficient coordination is what we call the "Spaghetti Syndrome." The Spaghetti Syndrome is different systems becoming linked together over a period of time in such a complex manner that no one has a general overview of the system structure. The spaghetti has many negative consequences. It is expensive and resource demanding, and it also makes changing the existing system difficult. Much of the existing, stored information is not accessible when needed.

• Time to start city planning

The basic idea behind city planning is to regard information as a resource just like other resources, such as personnel, materials, and money. A resource should be acquired, stored, processed, used, and even liquidated when it is no longer needed.
We attempt to manage the resource by planning and evaluating its handling within the business. We call this approach **IRM** (**I**nformation **R**esource **M**anagement).

The first step in city planning is to obtain a map of the terrain. We call this map "IRM-Matrix", which specifies which data is used within the different functions of the business.

The main problem is to draw a map that is stable. A theory for this was presented in 1970 by the British mathematician, Ted Codd. A working method for this was developed by SAS in 1979 in collaboration with Professor Bo Sundgren. The method, data-modelling, has now been used approximately 300 times in some 50 different Scandinavian companies.

The next step, after the map itself has been drawn, is to examine how the city plan should be designed, and how it should be implemented. A method for this; IRMA has been developed by IRM Consult and utilized in some ten firms such as Gotabanken, KTAS, PK-banken, PTT, RKA, SAS and SSAB.

Work is carried out as a project during a 3 month period in which personnel who well know the business participate. EDP-personnel also participate, adding their knowledge of the present system.

Management's Role

Top management's interest and active support is imperative for good results. Management actively participates three times during the course of the project:

The First Time at the beginning of the project when the decision for embarking upon the project is made.

The Second Time after about 2 months to receive a status report and to describe business ideas and critical success factors within the business.

The Third Time to decide about future steps based on the result presented.

A closer examination of these stages is presented in a separate fact sheet.

• Practical experiences

The ideas used in IRM and the approach behind city planning according to IRMA were described for the first time in an article in Ekonomen (the Economist), forerunner to Ledarskap) as early as 1982.

The article was written under the heading, Data-Strategy, entitled "Planning for the Future: IRM makes information easier to find for SAS."

Reading this article five years later shows that the basic ideas have not changed at all.

Practically Speaking, Then, What Has Happened Since the Article Was Written?

Shortly after the article was written, Jan Carlzon carried out an extensive and necessary decentralization of the SAS operation. This resulted in a decreased interest for central coordination, and IRM-concepts were put on hold. The method of data modelling, however, has been used consistently in the development of new systems.

It is also true that earlier technology for IRM was inadequate. Today, however, the situation is different. For example, IBM's launching of DB2 gives increased possibilities for realizing these ideas.

Also business development, discussed earlier, increases the need for managing information.

SAS recruited Björn Bold-Christmas, previously president of Ericsson Data Services, in 1987, to the group management as chief executive for SAS Information Strategy. At the moment the recruitment of three more people is in progress within the organization. These people are to be responsible for city planning. There is also an IRM-function within SAS Data that is to be responsible for the practical work.

At **The Post Office Department,** Gert Persson was recruited in 1987 to the management group to head the coordination of data processing within the Post Office Department. For many years, he has been an active advocate of IRM-ideas.

At the **National Telecommunications Administration**, starting at the beginning of the year, Henry Nilsson, previously head of Norrköping's Telephone District, will lead coordination work.

These are three examples of business enterprises with executive posts responsible for directing the information resource. In the United States, these people are called CIO, Chief Information Officers. This type of directing cannot be accomplished by an EDP department that is more or less a company of its own. One cannot be both city planner and building contractor.

To conclude, we can see that information is beginning to be considered a critical and important resource in more and more business. We are bound to see more "Chief Information Officers" in our companies in the next few years.

Fact Sheet:

Working Steps for the IRMA-Method

1. Obtain Support and Plan the Project.

Before starting work, it is important to have strong support from top management, operational departments, and the EDP department. It is also important that a project manager is appointed.

Next, the work should be planned in detail. The participants are appointed. The group should consist of about ten people who have a good business knowledge plus a few people from the data department. A time schedule is planned for the activities, and the date for the presentation of the final report is set, about three months from the start of the project.

2. Data Modelling

The foundation for the city plan is called a data model. This is worked out during a two-day seminar attended by all the participants.

At this time a uniform terminology is established, and the relationship between the different data in the business is described. This description is stable and is not influenced by business organization or routines.

3. Functions

The business is divided into about twenty main functions giving priority to the operative business.

It is within the operative functions that data arises, and it is here where the responsibility for acquiring data should be placed. The basic rule is to acquire data at the source.

4. IRM-matrix

The lines of the matrix denote the functions, and the columns denote the data from the data model.

This matrix is compiled during a seminar in which all the participants are actively involved. The IRM-matrix then becomes the map describing which data is used in each function. Data responsibility is also established here; that is, which function is responsible for the different data on, for example, customers, products and accounts.

5. Ideal Development Plan

Based on an analysis of the IRM-matrix, an ideal development plan is then worked out. This describes the order in which the systems and the data bases are to be developed, if all the systems were equally important, and the existence of the present systems is not considered.

6. Critical Success Factors

It is now time to include top management again. This is accomplished during a half-day meeting that begins with a status report including the ideal plan.

Next a list of critical success factors (CSF) is worked out together with management.

These factors then become the basis for judging the ways in which the ideal plan needs to be adjusted.

7. The Present System

Next an additional matrix is constructed with lines that denote the existing EDP-systems, and columns, which as previously, denote the data from the data model.

This matrix shows that the same data is treated in several different systems.

The matrix is also the basis for planning the liquidation of old EDP-systems. It describes which systems are influenced when new databases and systems are developed.

8. The Report

It is then time to compile the city planning report and discuss future work. The suggestions made concern such activities as the establishment of functions that can carry out the city plan, which technology should be used (computers, database management, communication's network etc.), how security should be handled, and how/when the first project should begin.

The report is discussed and approved by all the participants.

9. Report and Decision

The report is presented to management and a decision is made about future work.

10. Selling of Ideas

The city planning process and the ideas behind this planning involve changes in the present way of working. It is therefore important throughout the entire project to inform personnel who do not directly participate in the work. Information is an abstract resource, and therefore, it is difficult to handle and describe. As soon as concrete results are reached, it should be used selling the idea.