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THE IMPACT OF STRATEGY ON TECHNOLOGICAL ARCHITECTURE

Supporting Paper

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I. ABSTRACT

1. When we consider geology, a generation is defined as millions of years; with Internet technology, a generation is about six months; and with Information Systems, a generation is usually about 6-10 years. In the Israeli CBS the average time span for Information Systems has been over 10 years and sometimes over 15. In this paper I shall describe the influence of ICBS managers on the technological strategy and architecture of the Information systems at the CBS.

2. The strategic plan of the managers has been influenced of course by technological development, but in this paper I will show the link / influence between the managers' characteristics, education and career experience, and the IT strategy, architecture and Information Systems methodology from 1990 until today.

II. UP TO 1994

A. A strategic plan

3. The Strategic Plan of the top managers was **centralization**. They demanded **full control, command and professionalism**. As a result, we were almost isolated from the world of Statistics. It should be noted that one of the top managers was predominantly ideologically centralized. The Main-Frame period fits the top manager's approach.

B. IT point of view

4. As such, all the Information Systems were developed only as centralized systems. COBOL was our only single developing tool. Only the IT department was allowed to develop any Information Systems.

III. 1994-200 2

A. A strategic plan

5. In 1994, a new government statistician was appointed. He was an academic and had his own vision and a very different approach. Because of the ultra centralized architecture, he decided to tip the scales toward decentralizing in order to achieve the goal of moderate decentralization.

This included the following guidelines:

6. **Independence** - he demanded more and more independent capabilities for the Subject Departments, including the ability to decide and select their own developing tools and programming independence.

Exposure to the world, marketing our knowledge and experience - he changed the approach of sharing our product and methods with the world at large. Many employees began participating in national and international meetings and conferences.

Training - the CBS became a “learning office”. Employees were trained with technological software.

Writing papers - he believed that “Unless you write, you are not functioning”. A lot of papers were written and distributed during this period.

Department separation – The top manager believed that the CBS should and could differentiate between departments because they have different characteristics. Therefore, each Subject Department in the office may have a different physical network.

From a **security standpoint**, he believed that all the office employees should have the same degree of security. All data would be available to all the employees until a special prohibition is defined.

Standardization – the CBS attempted to achieve ISO-9000 standardization.

A Viable Infrastructure Vision - in 1998 we moved to a new building and had to plan the networks’ infrastructure. It was the first time that somebody from the top management declared: “Spend money on the networks as I want no major changes during at least the next seven years”

B. IT point of view

7. At that time, the PC swept through universities, schools and households and it was the beginning of web sites in Israel. This was according to the top manager's policy. As a result, a wave of renewals shook the organization. Departments chose their own developing tools; each department had the option to develop systems independently. Four departments with large budgets created IT groups within their own units. Many systems were developed in the Subject Departments. From an IT perspective, chaos was the outcome. A number of networks had to be sustained. We had to support and maintain several technologies (developing tools, databases) and dozens of Information Systems without any integration. We had several similar systems with different technologies as well as similar technology in different systems. Furthermore, we had to rapidly modify more than 50 information systems from a centralized architecture (Mainframe) to a decentralized one (PC).

8. In 1996, we created a unique Website, which was the first dynamic web in Israel that had the ability to post dynamic queries.

IV. 2002 - Up to Date

A. A strategic plan

9. In 2002, the Chief Statistician was replaced by an academic specializing in **economy**. His views reflected the idea of **Return on Investment** and **Calculation of Cost and Benefit**. This new strategic plan included:

Integration between departments – he believed in integration between departments and supported research projects between the different units. His motto was “we have to break through the internal barriers”.

System Integration – he encouraged creation of generic systems instead of the dedicated systems serving each user or group of users.

Consolidation - supporting and maintaining many technologies is expensive – it was essential to minimize technology and information systems.

Massive use of administrative files - administrative files consist of an official record created for administrative purposes.

10. The rapid technology development in Israel within municipalities institutes and firms and especially in the Israeli Government, created many administrative files that could be useful for the Central Bureau of Statistics' tasks. Due to the Statistics ordinance, the CBS is allowed to receive relevant files from various sources. The use of the administrative files was and is cheaper than the creation of survey data, however, it has its own limitations.

11. The public cooperation was in a decline because of concern and increasing awareness of rights of privacy and growing individualism, which made people less willing to participate in surveys. The use of the administrative files was and is easier.

12. **Using samples for research** - although we receive administrative files, the top manager believed that the research could be carried out on a basis of a sample from the administrative files.

Create one IT department - from all the technology and software development personnel. He believed in the many advantages of working in one development environment and its advantages for growth.

Security- with regards to security, his approach is the opposite of his predecessor. Because of 'hacker attacks' and the many risks we deal with on a daily basis, he believed that no one in the office should see the data until he had a dedicated permission. Moreover, one should avoid having an online access to identified data.

B. IT point of view

13. As a result, IT department tried very hard to consolidate systems and minimize the number of technologies and systems used. Due to the cost of transferring systems from one technology to another, it is mostly done by the new systems. In thinking that administrative files would be used more widely and they would become easier to obtain, we shall try to characterize them. In general, the existing government files are large in volume and include millions of detailed records. Some of them are in flat format files but most of them are stored in large databases that include hundreds of tables at government sites. Therefore we need significant capacity of storage.

14. The quality of the administrative files is somewhat unknown. Therefore the CBS needs to study them, to edit and cross-check with other files to verify accuracy of information. This means that the files need to be available for as long as we need to study and estimate their accuracy. Due to the increase in number of hackers and their success of getting into networks, there were many changes in office security policies: from full access to certain files to no access to the statistics data unless you have dedicated permission. Collection of these files and databases raise the security issue. As the number of files increases, an improved data security system is vital. The question arises whether it is justified to store these files in the same location.

15. The IT division has to prepare for the new strategy and to create an infrastructure to store these files. Together with the security information unit (unit responsible for the security policy), a security shell environment must be established. Presently at CBS, we are examining two methods each of them have it's own priority.

(a) **AVAILABILITY** - Creating available secured centralized databases will allow the users to easily access the information after request for permissions are invested and granted.

(b) **SECURITY** - Creating a general database template with a smart archive system that would utilize the files (offline) only when needed. This will increase security. The usage of the administrative files mainly by samples will create an additional security layer.

16. The correct balance of both methods is our goal.

V. SUMMARY

17. There is no doubt that technological development opens for the manager a new horizon of strategic planning. However, I believe that different managing characteristics, education and outlooks, has had a lot of influence on the IT architecture. We should take into account that everything that was mentioned above is influenced by the personality of the top managers as well.