Chapter 18
Digital State Strategy

ABSTRACT

The purpose of this chapter is to characterize indicators used to advance the computerization of various countries in the European Union (EU) and across the globe. To this end, typical state computerization configurations are classified, and graphical models of critical computerization application systems are presented for each type. Smart city concepts are included in one of the configurations. The chapter begins by examining the history of the development of computerization in the state. It then discusses how, in the 21st century, computerization has changed the relationship between governments and businesses. Next, criteria for assessing computerization are discussed. This is followed by a discussion of different computerization configurations, including the state offline configuration (SOFC), state online configuration (SONC), state integrated configuration (SITC), and others. The chapter concludes by examining Poland's state configuration, which aimed at helping their economic strategy during 2016-2020.

THE HISTORY OF COMPUTERIZATION DEVELOPMENT IN THE STATE

The history of the development and use of counting machines in state governments dates back to 1890 when the United States census was calculated on punch card machines (for 80 column cards with electric readings) produced by Hollerith. At the same time, these machines were gradually being used to mechanize data processing in business, which increased after the creation of IBM in 1924. Furthermore, the creation of the Social Security Number triggered a wave of development of data processing systems in order to meet the needs of the federal, state, and local administrations. This mainly occurred in administrative areas that dealt with multiple employee records, materials, fixed assets, funds (including bank accounts), buildings and premises, inventory, and payroll accounting.

Soon, the mechanization of censuses developed in Europe thanks to IBM, which resulted in the development of the French company Bull, which began manufacturing punch card machines in 1931. These machines were sold to many European countries, where, in competition with IBM and UNIVAC-Powers machines (for 90 column cards with mechanical readings), they began to be used to mechanize data processing in keeping records and payroll accounting in administration and business. In Central and

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Eastern Europe, cheaper Czechoslovakian Aritma machines (for 90 column cards with mechanical readings) and Soviet (Belarusian) SAM machines (for 80 column cards with electric readings) were also used.

During World War II (1939-1945), Germans, who value good organization, used mechanized censuses in several European countries (in particular France, the Netherlands, and Poland) to arrest "undesirable elements," including Jews. Unfortunately, around 4 million people died (Targowski, 2014a).

For the United States and the United Kingdom as well as in France, World War II gave rise to the development of electronic counting machines, called "computers" (USA-ENIAC 1946 and UNIVAC I 1951; United Kingdom-LEO I 1951; France-Gamma 60 1957). Beginning in the 1950s and intensifying in the 1960s, these electronic counting machines began to replace punch card machines and began to automate data processing, mainly in keeping records and storing accounting and payroll information. The spectacular development of the IBM 1400 series in the late 1950s and early 1960s with its business and administration applications came as a surprise to Western Europe.

In response to the US information technology challenge, President Charles de Gaulle developed *Plan Calcul* to encourage the production and use of computers in France. As a result of this plan, the company CII *(*Compagnie International pour Informatique*)* was established. Furthermore, the *Delegue pour l'informatique* was found in 1966, which aimed to coordinate and supervise the implementation of *Plan Calcul*. Thus, at this point, in addition to the American terms *computing, data processing, computer science,* and *software*, the French added the word *Informatique*, which means the technique of information processing. After five years, such a plan was adopted in Poland. In the wake of *Plan Calcul* (Targowski, 1971), the book *Le Défi Américain* ("the American Challenge") was published by Jean-Jacques Servan-Schreiber (1967), a politician who described the United States and Europe as engaged in a silent economic war in which Europe seemed outclassed entirely on all fronts: management techniques, technological tools, and research capabilities. At that time, 600,000 copies were sold in France, which was unprecedented for a political essay, and it was translated into 15 languages. This book contributed to the revival of French nationalism and highlighted the importance of transnational cooperation in Europe.

In Poland, even though the pro-Soviet Polish People's Republic prevailed, technical intelligence was aware of the American challenge. This resulted in the creation (even before France) of the Office of the Government Representative for Electronic Computing Technology in 1964. Thanks to this decision, a network of ZETO service computing centers (Electronic Computing Technology Plants) developed in all 49 provinces.[1] It had about 6,000 employees, including the country's best IT professionals at the time. Because this was a pioneering period in the development of computer science applications in Poland, the strategy at the time had to address the problem that there were not enough IT specialists to develop applications in dozens of ministries, including those concerned with economics, education, and health. By focusing on the ZETO network, data processing applications in these areas was developed at a reasonable level, and they were carried out on real computers, which were sorely lacking at the time. At present, service policies are rapidly evolving due to the so-called "digital cloud", which is an IT service. This confirms the validity of the creation of the ZETO network 56 years ago.[2]

In 1971, the implementation of the first Computer Science Development Programme for 1971-75 began, based on the National Information System (NIS) model shown in Figure 1. The model provides vital Information Control Systems (CIS) for the centrally planned economy. However, these systems do not arise from the Lange Model, which tied together all suppliers and customers into a single system and calculated (*apriori*) the optimal trade. This would all be accomplished thanks to a supercomputer that would ensure a stable balance in the economy.

NIS development aimed to: