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## The Central Register of Foreigners - A short history of early digitisation in the Swiss Federal Administration

Guido Koller

The modern Swiss Confederation was founded in 1848. Since then, government and administration have been constantly reorganised. One important, but little noticed change occurred between the 1960s and 1980s: the automation and standardisation of information management. This was an important requirement for taking “binding decisions” (Niklas Luhmann) in times of rapidly growing quantities of information. In this paper, I will examine the steps toward automation in the Swiss federal administration using the example of the *Zentrales Ausländerregister* (Central Register of Foreigners; ZAR) of the *Eidgenössische Fremdenpolizei* (Swiss Police for Foreigners). I will focus on the ZAR and data processing as a means of operationalising administrative workflows, showing that data processing developed incrementally on a path that finally led to the digitisation of increasingly large parts of the administration. A generalisation of this example yields a historical model of the early stages of digitisation of public administrations that would ultimately lead to various forms of e-government.

### 1. What is the public administration and how did it evolve?

The public administration assists a government—the executive—in its function to execute decisions made by the parliament (the legislature) (Wilson 1887). In assisting the executive, the administration’s responsibilities include the preparation, implementation, and execution of laws,

regulations, and directives (Fleiner 1911: 7). During this process, the administration produces “binding decisions” that not only set a framework for society, but also increasingly entail a controlling function (Luhmann 2000: 84f.). In the 20<sup>th</sup> century, governments and administrations increasingly devised, planned and realised steps to steer certain areas of policy. The substance, direction and extent of these coordinating and controlling functions take different forms on a national and supranational level. In this article, I will explore the example of the Swiss federal government.

Administrative history analyses the origin, development and change of interactions that produce such binding decisions within the administration. In this paper, I will focus on the practices of the Swiss federal administration between 1960 and 1980, when these decisions were increasingly made based on automatically processed information, using the example of the ZAR. For this purpose, I will first introduce some key elements of the Swiss federal administration. This brief background information aims to give a better understanding of the “Swiss path” of administrative automation.

## **2. Moving on from the Ancien Régime: the evolution of the Swiss federal administration**

The modern Swiss Confederation was founded in 1848, after a short war which saw the progressive liberal cantons prevail over the conservative Catholic cantons. Since the decentralised administrative structures, which largely dated from the *Ancien Régime*, no longer met the requirements of a modern 19<sup>th</sup> century political system (Bäumlin 1961: 69f.), a new central administration—a “classical state apparatus”—was needed, as Raimund E. Germann titled the second chapter of his well-known book on the public administration in Switzerland (Germann 1998).

The groundwork was laid by the Federal Act on the Organisation and the Course of Business of the *Bundesrat* (Federal Council, government) of 7<sup>th</sup> July 1849. The *Bundesverwaltung* (Federal Administration) in par-

ticular was charged with designing the framework for a modern economy and society. These measures—which were based on resolutions of the *Bundesversammlung* (Federal Assembly, parliament) and the Federal Council—were aimed at unifying a culturally, linguistically, religiously and economically highly fragmented territory.

Due to its growing workload the administration was repeatedly enlarged and reorganised. The Federal Council was divided into seven departments, which still exist to this day, with clearly defined responsibilities shared between them. This delegation of tasks was specified in detail in the Federal Council's resolution concerning the competences of the departments and their heads issued on 9<sup>th</sup> April 1897. This civic nature characterised the Swiss political system for a long time, as Max Weber also noted (Weber 1922). Decisive shifts in professionalisation occurred during World War One and World War Two.

In the context of the bureaucratically organised and coordinated war economy, the federal government extended its administration massively during the 1930s and 1940s. Because of the development and expansion of the welfare state after World War Two and a corresponding population increase, a significant part of the government's savings efforts after 1945 went unnoticed. Therefore, the Federal Council installed the *Zentralstelle der Bundesverwaltung für Organisationsfragen* (Central Office for Organisational Issues of the Federal Administration, ZOB). Among other things, it was responsible for conceptualising and planning data processing in the different government offices. An important and early project was the ZAR.

### **3. Managing data: The Central Register of Foreigners (Zentrales Ausländerregister, ZAR)**

The ZAR, the Central Register of Foreigners of the *Eidgenössische Fremdenpolizei* (Swiss Police for Foreigners), is an early example of data processing and automation in the Swiss federal administration. Its operational objective was to process more information in a shorter time. Before

describing and analysing the ZAR, a conceptual clarification seems to be important: we must differentiate concepts used in the 1960s from those used today. The term “information and communication technology” (ICT) is new. Its use today emphasises the integration of hardware and software. It should enable users to collect, store, edit, output and communicate data in a uniform manner. In contrast, the term “data processing” still seems to be used like it was in the 1960s: it refers to collecting and processing information objects. If data—that is numbers, text fragments or other objects—are automatically processed on a given program, we speak of “automatic data processing”. James Cortada gives a good overview of the history of information and its different concepts especially in the US (Cortada 2016).

Before exploring the ZAR in more detail, I will provide some information on the political background of the project: from 1960 to 1965, the number of foreigners living in Switzerland increased from 496,000 to 810,000. Politicians were talking about a “strong influx that should be reduced”. The Federal Council adopted “first measures to restrict the influx” in 1963. In order to assess the effectiveness of these measures, reliable statistics were necessary. For the police the “problem was essentially a question of numbers and statistics”. Therefore, the police proposed to use federal statistics as a way to chart and monitor all foreigners in the Swiss cantons. After an assessment of this proposal by the ZOB, an expert group was established in 1966. Based on its report, in 1970, the Federal Council decided to develop a central register. In 1971, the project was pioneered in four cantons. Two years later statistics for all Swiss cantons were available for the first time. In a second phase, after 1975, the application was expanded with more comprehensive table tools and a network of stations and screens. Incrementally, this statistical tool evolved into a permanent inventory—a database.

Implementing the ZAR project was quite complex: in 1973, all Swiss municipalities collected and registered information on 1,493,573 individuals on paper forms. They transmitted the data to the ZAR, where it was

copied to magnetic tapes in the data centre of the *Bundesamt für Statistik* (Federal Statistical Office, BfS). After a plausibility test, the data was linked to the number of the *Alters- und Hinterbliebenenversicherung* (AHV) — OASI (old-age and survivors' insurance) number—that was used as the official Swiss social security number at the time. Consequently, a dataset was definitive and official. Programming and analysing the ZAR took 17 months, and subsequently the data was updated continuously. 23 employees, mostly women, made about 8,000 changes a day. At the beginning, there were some challenges with the input and output of the ZAR: because around 30 percent of all foreign individuals left Switzerland without officially signing out, their departure was not registered. Other problems arose because initially births were registered as new entries instead of births, and some professions were wrongly coded. Furthermore, some of the tables were too complicated to be used.

Despite these problems, statistics were more reliable than before. 18,000 duplicates could be eliminated. However, the operation of the ZAR was very costly and the automated data exchange required an intensive cooperation with the other parties involved. In the beginning of the second phase, in 1975, the application was extended with more comprehensive table tools. Afterwards, the ZAR was equipped with terminals for working with the permanent inventory. Gradually, a statistical tool evolved into a usable database. This database was cross-linked with different competent authorities on the federal and cantonal level. In 1977, 36 different terminals were integrated in a network between the ZAR and the data centre in the BfS. The ZAR became the most important tool for the Swiss Police for Foreigners. It enabled the police to control the duration of stay and deadlines, and was used to find addresses (in order to collect taxes or alimonies), for surveying foreigners for the *Bundesanwaltschaft* (Office of the Attorney General of Switzerland), for the monitoring of entry bans and as a basis for the calculation of entry quotas.

The Swiss Police for Foreigners believed in the concept of a permanent inventory that “has brought a much improved control mechanism”

to Switzerland. According to officials, it helped reduce costs as administratively 27 jobs could be cut. Establishing a network caused a new problem: securing and protecting the data. In 1983, the Federal Council published an ordinance for the ZAR that for the first time contained relevant regulations.

The general characteristics of the ZAR can be used for describing a historical model path for the early stages of digitisation in public administrations: the need to process more information in less time led to the search for economic solutions and investment in data processing. The result is an operationalisation of administrative processes for the production of binding decisions. It is perhaps reminiscent of the image of the government as a machine (Agar 2003) —see, for instance, the concepts of Charles Babbage or Walter Bagehot—and of its opponents: Thomas Carlyle, Henry Thoreau and Alexis de Tocqueville thought that a government was rather a moral issue (I will come back to this in the *summary*).

It is evident that the state's need for coordination was rapidly increasing. So was the demand for the standardisation of information and appropriate technologies such as forms as interfaces between the state and its citizens and punch cards for the mechanisation of registers. In this historical model, a systematic administration enables technological change and vice versa, and the state acts as a model for the path towards automation (census, statistics, register etc.).

#### **4. At the heart of the administration: the ZOB**

The ZOB was amongst other things responsible for conceptualising and planning data processing in the different government offices. A brief overview of its responsibilities can be found in an article by Otto Hongler, one of its directors (Hongler 1978). In 1960, the Federal Council entrusted it with the planning and coordination of automatic data processing in the federal administration. To this end, it granted the ZOB the authority to issue technical directives, although the latter did not run the computers. They were operated by the BfS, the first government office to pro-

cess data automatically. In the 1970s, there was a growing demand for streamlining and creating better workflows in the administration. For this reason, it was decided to strengthen the ZOB's position and to employ more computer specialists in the ZOB and selected federal agencies. Parliament agreed to the Federal Council's request and passed the Act of 19<sup>th</sup> December, 1980, upgrading the ZOB to the *Bundesamt für Organisation* (Federal Office for Organisation, BfO). The 1980 Act explicitly mentions the promotion, coordination and monitoring of automation and data processing in the administration as one of the main functions of the BfO. It was now responsible for issuing new directives and technical instructions on appropriate and economic workflows and tools. The first technical instruction on data processing in the federal administration dated from 6<sup>th</sup> January 1961.<sup>1</sup>

Although considered as a digital revolution today, this change was, on the whole, incremental. In the administrative sector, data processing developed into information and communication technology (ICT) during the 1990s. This change was accompanied by a shift in perception. The focus on organisation was replaced by a focus on processes and computers: in 1990 the Federal Council dissolved the BfO and transferred its responsibilities to the *Bundesamt für Informatik und Telekommunikation* (BIT) (Federal Office of Information Technology, Systems and Telecommunication, FOITT).

## **5. Data processing: the flow of information in the administration**

With the growth of the federal administration, more information had to be processed in less time. One important example was, as described, the *Zentrales Ausländerregister* (ZAR), which was set up to establish reliable statistics and evolved into the main tool of the *Eidgenössische Fremdenpolizei* to control the residence of foreigners in Switzerland. Another was the *Alters- und Hinterlassenenversicherung* (AHV), which provides each resident with an identification and insurance number. In view of this,



a technological change began that would have a lasting effect on the administration. During the 1960s, the collection of data was standardised and the procedures were increasingly computerised. Automatic data processing appeared to fulfil the promise of greater efficiency. This is illustrated by a short and interesting film produced by the *Schweizerische Filmwochenschau*.<sup>2</sup> It shows one of the largest data processing machines operating in Europe: the first computer of the Swiss Post Office installed in 1957. Two points in the narrator's commentary are very enlightening: first, he states that "the electronic brain can only handle problems that have been thought and planned by human intelligence". Secondly, he points out that "the purpose of using the machine is not about developing artificial intelligence, it is merely a measure to counter staff shortages!" So, again, the focus was on efficiency: more information had to be processed in less time.

At the beginning of the 1960s, the federal administration was running three data centres and had about ten large data processing machines: one at the BFS that functioned as an electronic data centre for the whole administration, and three at the *Eidgenössische Technische Hochschule* (Federal Institute of Technology, ETH) in Zurich, two at the Military Department and three others for social security, customs, and taxes. At the time, the ZOB prepared a policy paper on data processing in the administration. This paper tells us much about the perception of the challenges in processing information automatically and the first concepts for solutions. It begins by highlighting the benefits of data processing systems: great speed in performing operations (once it is prepared, see below), a more comprehensive analysis with little additional effort, print-ready tables and easy, space-saving archiving. But there are also disadvantages: data processing is a rigid system and has no flexibility; consequently, a great deal of work went into preparing operations. Finally, computers were very expensive and created staff problems, because experts were rare and costly.

The ZOB listed a number of requirements for operating such a system. Data technology is always ahead, said the ZOB, not all applications are predictable, and electronic processing is only suitable if computing tasks fulfil the following conditions: the task must be described in detail and logically; it must have a minimum volume; and it should have a certain routine character. But the main condition for operating such a system, according to the ZOB, was the adjustment of management methods as well as accurate and full planning. The ZOB's organisation experts said there could not be any short-term modifications of rules and workflows.

Statistics prove that the ZOB's policy was quite successful. By 1978, the federal government already ran 47 computers: the Federal Department for Home Affairs had 16 machines, the Post Office 13, the military 7, the Federal Departments of Finance and Economics 5 each, and the Federal Department for Foreign Affairs 1. This equipment was worth around 195 million Swiss Francs and was run for more than 71,000 hours by 660 staff, most of them experts. As a result, staff and running costs were very high: 116 million Swiss Francs. The BfS still operated as the data centre for 33 government offices. It was running three computers now with a staff of 128 and costs of 32 million Swiss Francs. In 1980, the ZOB's responsibility for data processing was, as already mentioned, institutionalised by law.

An assessment of the ZOB's policy paper dating from the early 1960s reveals that, rather than holding a digital vision its aim was to solve problems in the management of increasing amounts of information. Therefore, data processing developed gradually on a path that would ultimately lead to the digitisation of important areas of the administration, and the operationalisation and standardization of administrative workflows. A generalisation of this example yields a historical model of the early stages of digitisation of public administrations which is briefly described in the following section.

## **6. Summary: sketch of a historical model for the early phases of digitisation in public administrations**

Based on the example of the ZAR, this short history of the early stages of digitisation within the Swiss federal administration describes the origin, development and change of interactions that produce binding political decisions on a federal level as conceptualised by Niklas Luhmann. In order to maintain the ability to resolve problems in the light of increasing government spending, the federal administration was continually reorganised. This reorganisation included the expansion of the principle of departments, the delegation of responsibilities within the administration and the rationalisation of workflows. One important, but little noticed reform occurred in the 1960s and 1970s: the automation and standardisation of information management. To derive from this example the criteria for a historical model of the early stages of digitisation of public administrations, the following question needs to be answered first: is the government a machine (Agar 2003)?

The metaphor of the government as a machine was coined in the second half of the 19th century. Numerous prominent intellectuals shared this view, but many disagreed, stating that government was a moral issue. Their view was supported by many strong arguments. States shape the lives of their citizens and all other residents in their territories. Governments and administrations want control over this territory. They collect as much quantitative data as possible to manage it. Through censuses and other surveys, they gather much information about the population living in their territory. These surveys are more than statistics. The foundation of all statistical work is the creation and maintenance of registers that ensure the identity of an individual legally and administratively. The data collected is stored and managed in registers that allow the government to control and steer various aspects of the development of the population, economy, science, education, and other public issues. Clearly, the collection of data as an element of standardisation and objectification is a question of trust, as Alain Desrosières and Theodore Porter stress in their

books about the history of statistics in France and the US (Desrosières 2000; Porter 1995).

As we have seen, the state's need for coordination and control entails a growing demand for information. The technology and tools used to collect and manage this data are well known: forms, the interfaces between citizens and the state; and registers, which can be mechanised and processed using punched cards with a machine and are updated constantly, and thus gradually develop into permanent inventories or databases. Governments invest vast funds in these infrastructures and statistics. They are a model for an early automation of workflows with certain volumes and a routine character. Organisational aspects such as the management of registers and the control of information flows are decisive. The essential requirements are standardisation and organisation. These aspects form the outline for a historical model of the early stages of digitisation of public administrations.

In short, the history of administration shows that early digitisation is driven not only by technology, but also by the organisational challenges of large administrations. They had to process large amounts of information and therefore needed standardisation and mechanisation. The first data processing machines were a response to this. They helped to solve governments' constantly increasing information challenges. Administrations were continuously monitoring the technology market in search of innovative machines and procedures. *Bull*, *IBM*, *Olivetti* and *Siemens*, to name just a few manufacturers, responded to this demand.

## Notes

<sup>1</sup> The information is taken from the following file in the Swiss Federal Archives: E6502-02#2002/226#16\*, Vorgeschichte Bundesamt für Informatik BFI, 1986–1989.

<sup>2</sup> See [https://www.youtube.com/watch?v=\\_ZBuJnY8cTA](https://www.youtube.com/watch?v=_ZBuJnY8cTA), minute 4:50.

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