

History of the first Czech computers

PRESENTATION

(The Handout)

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- Outline:
- I.) What will be presented?
 - II.)
 - a) SAPO components
 - b) SAPO unique
 - c) Developing EPOS
 - d) URAL purchase & problems
 - e) Some “URAL” details
 - f) URAL peripherals
 - III.) More situations, comparison ...

When the computer technology was beginning in Czech republic (ČSSR), it wasn't easy. In this presentation, I'm going to explain the first two computers in our country – SAPO & URAL. These two are rather prehistory than history.

Antonín Svoboda developed SAPO in the fiftieth and it broke down at the end of the fiftieth. He used electromagnetic relays (that were unreliable), because in our country was a lack of another components.

This computer wasn't very fast, but in many ways, it was unique. In journal “Vesmír” was written: “In the history of computer technology is SAPO the first computer in the world, which used von Neumann's theory for constructing reliable systems from unreliable components (next computer which was using similar principles to raise reliability was even the master computer for the Apollo project).”

When SAPO broke down, they didn't repair it and they decided to develop valve computer. It was called EPOS. But developing this computer went very slowly. I think it was very difficult, because we couldn't buy parts from west lands (such as America or west Germany) and the parts from USSR weren't useful. So sometimes we had to make components by hand.

“Fortunately”, the great Bolshevik Jaroslav Kožešník arranged purchasing the “progressive” Soviet computer URAL. It was really funny “appliance”. Just for your imagination – problems were: bulk (it occupies the whole floor), power consumption (resulting from the use hundreds of twin triodes). And when there still wasn't installed an air-conditioning, operators had to have opened windows to cool the machine (fortunately outside temperatures were –12 °C). But unfortunately for the operators, could you imagine their hard work?

For example, Petr Vysoký in Vesmír said: “Its power losses were comparable with a power of a heating boiler for an average Prague house.” In addition to these facts, the computer needed continual repairing. This was work for several engineers. Sometimes, they had to arrange or slightly reconstruct it. There wasn't operating system. Programmers were programming directly in the machine code.

Most interesting were computer peripherals. Computer used punched tape as an external memory. But not paper tape; it was exposed film with perforations. Internal memory was designed as the memory drum. The capacity was 2048 instructions. Now, I'll explain you typical USSR solution. The most interesting thing of computer peripherals was a printer. In the journal Vesmír is written: “Printer was perhaps developed by Jára Cimrman personally. It was based on the Russian typewriter. Under every key was a telephone relay.” The key was connected with the relay using a string. Relay was operated → letter was printed.

There are much more funny situations and technologies in history of first Czech computers, for example building a new building for computer, fighting ☺ with communists... etc. You can read more information in my source for this presentation (Vesmír 4/2005). Now, when I weight it up, I think that we wasn't so behind in the world “computer scene” – only just something about 20 years (first electronic computer was ENIAC in 1946).

Definitions of technical terms:

electromagnetic relays	- Electrical device such that current flowing through it in one circuit can switch on and off a current in a second circuit. (elektromagnetické relé)
valve	- electron tube (elektronka)
twin triode	- two triodes (kind of electron tubes) in one (dvojitá trioda)
power losses	- if the appliance is losing power, this power doesn't help with the work; it goes away (výkonové ztráty)
heating boiler	- The heater that transforms fuel or electricity into a hot water, this water is distributed in the house using water tubes (kotel ústředního topení)
machine code	- A set of instructions coded so that the computer can use it directly without further translation (strojový kód)
peripherals	- electronic equipment connected by cable to the computer (periférie)
punched tape	- A tape on which data can be recorded in the form of punched holes (děrovací páska)
memory drum	- a drum, which we can use to store data, which are used by computer (bubnová paměť)
key	- a small metal piece, when you strike on it, sth. is printed, etc. (klapka)
operate relay	- handle and cause relay to function (sepnout relé)

Outside References:

My source of references, which I use in this presentation, is:

Journal: Vesmír 4/2005 (April)
Article: Počátky počítačové techniky nebyly jednoduché
(Beginnings of the computer technology weren't easy)
Author: Doc. Ing. Petr Vysoký, CSc.