

Computing in Hungary – Through the History of Five Institutions

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Content

Five leading institutions by the late 80s

- MTA KKCS/SZK -> ... -> MTA SZTAKI
- Infelor -> ... -> SZÁMALK
- KFKI
- SZKI
- VIDEOTON

plus three outstanding personalities:

Laszlo KOZMA, Laszlo KALMAR, Arpad KLATSMANYI

And a few words about the present ...

First computer in Hungary

- 1953: letter from the prison to HAS
- 1956: Cybernetics Research Group of HAS (KKCs)
 - task: computer to Hungary
 - original design vs. Import (USSR)
 - commercial vs. academic channel
- 1957-59: building of M3
 - documentation + many improvements
- 1960- first applications
 - scientific-technical calculations,
(macro)economic, linguistic etc.
 - > renamed Computing Center of HAS
- 1965: Ural-2, 1970: CDC-3300
- 1972: merge with Automation Research Institute of HAS(AKI) =>

Computer and Automation Institute of HAS (SzTAKI)

Russian prehistory

48: *Bruk-Rameev*

patent , project...

51: M1 (first Russian)

54: M2, *Karcev*

(„workhorse”)

56: M3, *Matjuhin*

(for small users)

„illegitimate” -> spread
thru academic channels:

Tallin, Erevan, Beijing

59: production: Minsk

Computer applications

- traditions with punched card (Hollerith) equipment
 - IBM Hungary since 1936, uninterrupted(!)
 - overall national responsibility at Central Statistical Office (CSO)

= > important source of computer applications

supervisory role of CSO extended to all applications

1965: first „market oriented” development organization established:

INFELOR (~ software house)

in 1975: Computer Research Institute (SZAMKI)

+ whole „empire” of computer application institutions

- education, training (SZAMOK: 1969, UNDP grant in 72)
- support services and publishing
- network of regional computing centers

1982: united into giant

**Computer Applications and Service Company
(SZAMALK)**

Highlights of software projects:

- basic software for the Hungarian designed EMG 830 computer
- data processing and production control (ERP-like) systems for large factories (e.g. Chinoin, Ikarus)
- industrial process control systems (e.g. Paks ~KFKI)
- large registers for public administration (e.g. population)
- integrated software development support system (SOFTORG, ~SZKI)
- operational research algorithms and applications (~SZTAKI)

Minicomputer family development

- Central Research Institute for Physics (KFKI) established in 1950
 - wide range of experimental research, nuclear reactor etc.
 - instruments needed -> strong Electronics Department
 - in mid 60s: use computers for measurement automation
 - availability of wide range of application software is needed

⇒ compatibility with the leading minicomputer family: DEC (PDP)

- reverse engineering with many original solutions
 - use outside of academic research: mass production, commercial product
 - for „political” reasons called: Stored Program Analyzer (TPA)

years	compatibility	type: TPA-	production
1966-80	PDP-8	-1001, -i, -L/**	~800
1970-75	-	-70, -70/25	~100
1976-87	PDP-11	-114*, -11/42*	~500
1983-89	VAX-11	-11/5**	~150

Main application areas:

- measurement and control systems in oil and energy industries, nuclear power station (Paks)
- laboratory automation systems in research institutes
- production and process control systems in various enterprises

Unified System participation

- 1968: Eastern Bloc decision to produce series of computers with widely available software supply: **IBM 360/370 family** (illegal(?) cloning)
- Hungary participates with the smallest member : R-10, (+peripherals)
 - not IBM compatible: French license: CII **Mitra-15**
 - (later 370/115-125 compatible R-15) + peripherals of Hungarian manufacturers
- 1969: institute to coordinate Unified System efforts in Hungary: **SzKI**
 - participate in the various technical organs of the cooperation
 - adapt Hungarian products to Unified System standards (and get them accepted)
 - develop some of the products (R-10, R-12, R-15)
- But from the very beginning SzKI performed significant R&D activities in areas not connected to the Unified System cooperation. Some examples:
 - development of network based application systems (railways, banking etc.)
 - software products distributed in international markets (*MProlog, Qualigraph, Recognita*)
 - creation of innovative image processing methods with applications in many fields
 - operating the most advanced Siemens computers (allowed by the embargo, or... !)
 - starting the organized software export activities (paying for Siemens equipment with work)
 - development and distribution of the first Hungarian made PC family (*Proper-8, -16*)
 - etc.
- Since mid 80s the name of the institute changed to
Computer Research Institute and Innovation Center

Computer manufacturing

- VIDEOTON established in 1938 for producing ammunition,
- switched to telecom (Radio, TV and also military electronics) in the 50s
- received computer manufacturing profile in 1968
 - French license, Unified System participation
- factory in Szekesfehervar, development institute in Budapest
- Trade representations in 11 countries (including UK, Germany, China)
- Computers :

Prototyp e	Videoton	Unified
CII 10010	VT 1010B	-
Mitra 15	VT 1010	R-10
Mitra 15	VT 1012	R-12
-	VT-1005	(R-5)
Mitra 115	VT 60	R-10M
Mitra 225	VT-600	R-11
Mitra 525	SzM 52	CM-52
(Unix)	VT-32**	-

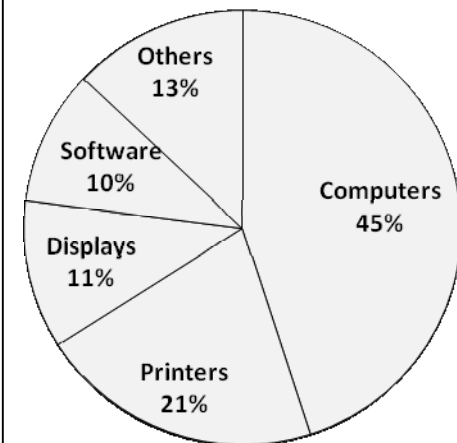
Peripherals:

- display terminals (90 000 pieces sold!)
VT-340 (!), VT-52***. VT-47***, VDY,
...
- VT 56000 (microprocessor – embargo!)
- line printers (~DataProduct licence)
VT-2400, -2500. -2300
VT-21400 (matrix),
- laser printer: VT LP -> CM 6314 (first!)
- optical disk: magneto-optical, 640MB

Personal Computers:

- VT 110, VT 160, TV Computer

Product mix



Three outstanding personalities



Laszlo KOZMA (1902-1983)

Patents on computing devices based on electromechanical relays (late 30s, Bell Lab. Belgium). One of the authors of the „prison letter”. Professor of TU Budapest, in 1955 built MESZ-1 relay-based computer for education purposes.



Laszlo KALMAR (1905-1976)

First among Hungarian mathematicians to realize significance of electronic computers. Organized computing courses (with degrees) at Szeged University in late 50s. Developed Logic Machine (without active elements). Outlined principle of operations of a Formula Based Computer, some of his ideas realized in the MIR computer family in Kiev.



Arpad KLATSMANYI (1923-2007)

Established development of digital equipments in the Electronic Measurement Factory. After several desktop calculators (Hunor), in 1966-68 developed a medium sized computer family with completely original, modular architecture and software system (EMG-830). After manufacturing 15 configurations, computer development was stopped at EMG in 1970 for industry-political reasons.



**IEEE Computer Society
Pioneer Award in 1996**

Present status

- MTA SZTAKI →
 - high level academic research institute with international reputation,
 - EU Center of Excellence since 2002
- SZAMALK →
 - privatized in early 90s,
 - leading institution of adult education,
 - all other profiles disappeared
- KFKI →
 - split: computer R&D departments privatized in early 90s
 - *KFKI Inc.* becoming successful system development company
 - since 2006 owned by *Hungarian Telekom*, part of *T-Systems*
 - KFKI Computing Center continued to serve physics research
 - in 2013 opened *CERN@WignerData Center* !
- SZKI →
 - completely dissolved in early 90s
 - some of its spin-off companies survived, e.g.:
 - *IQSOFT*, a successful software house in the 90s, joined KFKI in 2003
 - *Recognita* became R&D subsidiary of *Nuance Communications Inc.*
- VIDEOTON →
 - all computer related activities stopped in 1990
 - privatized in 1991 and reorganized into *VIDEOTON Holding* providing infrastructure and services for manufacturing
 - became the 5th largest EMS (Electronic Manufacturing Service) provider in Europe



celebration: 09.23-24

szamalk



And much more....

5 + 3 does not cover everything...

- National programs for research, development and applications
 - coordinated efforts,
 - licensing policy,
 - state financing
 - Hungarian Software (myth and reality)
 - good human resource preconditions (talent, education, math, ...)
 - well developed application systems, small domestic market
 - export orientation (in East: „Sofia Principle“= no price for software)
 - a few successful „niche products“ (*Archicad, NavNGo, Recognita, games...*)
 - + „manpower leasing“, many programmers working abroad
 - professional civil organizations
 - **JvNCS** (+ telekom, teachers entrepreneurs,...)
 - mass popularization in 70s („microcomputing“)
 - scientific conferences, international connections
- + **preserving values of the past !!!**

*National Committee for
Technology Development
(OMFB)*

1986 (!!!):
Nationwide research
network (IIF)
= preparing to Internet age

Now: ECDL !

- memorial meetings,
- Data Archive:
organized collection of data
- **Computer Museum !**