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# Time-sharing in Denmark in 1968

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**Abstract.** "DeIData Service", a time-sharing system, was introduced in Denmark by ØK Data (a subsidiary of ØK, the East Asiatic Company) in August 1968. The system was originally developed by General Electric in cooperation with Dartmouth College, who also developed the programming language BASIC. The system was in operation in various US cities already from 1965 and in Denmark it continued until 1991. The users subscribed to DeIData and did their programming and computations from Teletype terminals via standard telephone lines.

## 1 Background

During the years 1963-64 the first full-scale system for timeshared use was developed at Dartmouth College in Hanover, New Hampshire. The Dartmouth Time-Sharing System (DTSS) offered time-shared computer time to many simultaneous users, who used the system from Teletype terminals accessing the computer via modems and ordinary telephone lines. The users at the Dartmouth campus could use Basic, Fortran and Algol as programming languages.

In 1965 General Electric (GE) introduced it as a commercial data-service working from Phoenix in Arizona where GE's computer department was located. In the following years GE opened the time-sharing service in many larger cities in the US, and in this period the author worked for GE, first in Phoenix and from 1966-68 as a senior consultant in New York, where he became leader of the Customer Services Group, that marketed the time-sharing service and supported the users. Among the users were large consulting engineering firms and research centers in New York and New Jersey.

In 1968 a group from ØK Data, headed by the managing director Ole Stangegaard, was in New York and experienced GE's time-sharing system. Shortly after that the author joined ØK Data in Copenhagen and was appointed the leader of a new DeIData department. This department should introduce the GE-system in Denmark, negotiate a license agreement with GE and start a similar time-sharing service, which in Denmark was named "DeIData".

## 2 Strategy for Data Communication in ØK Data

ØK had global business activities, and as a subsidiary of EAC (East Asiatic Company) ØK Data adopted the motto of EAC's founder H. N. Andersen: "The earth is not too great to be spanned by human thinking". Some of the reasons behind establishing ØK Data in 1966 as a separate, wholly-owned company in the EAC concern were:

- Ole Stangegaard had, while he worked at Datacentralen, been involved in maintaining a business-model that monopolized the data-processing for all institutions under the Government or supported by the Government. This led to many frustrations because in the mid 1960s the requests for data-processing were few. A similar difficult situation could easily arise if the Data section had been a department of EAC.
- In the 1960s IBM were heavily dominant in marketing computers in Denmark, and Ole Stangegaard wanted the EAC-based company to support a more open vendor supply.
- A new IT-company created to support EAC, which had very diversified and global activities, should in the long run be able to develop and support coming needs for IT solutions anywhere in the Danish society.

Based on these reasons and also more general discussions with EAC's management the mission for the future work in ØK Data was formulated in four points:

1. More than 50% of the sales in ØK Data shall – in the long run – come from IT services and activities outside the EAC concern.
2. Prices and services shall be the same for customers within and outside the concern.
3. Price rates for computer usage and support services shall be based on market demands.
4. ØK Data must – as soon as possible after business start in 1967 – deliver a positive income.

The creation of ØK Data led quickly to the start of some data-communication activities:

Some EAC departments were connected point-to-point on leased lines to the central IBM computer, using well-known technology to give access to centrally stored data and computations.

EAC already used TexCom, a Telex-based 'store and forward' message switching. The EAC centers in Hongkong and Singapore specified together with ØK Data an improved message switching system, that was developed and implemented by Regnecentralen A/S in Denmark. The system was to be used for all telex correspondence but also for many data on container movements, container ships and harbours.

ØK Data started a project to introduce a time-sharing system in Denmark, open for anybody. After signing a license agreement with GE on using GE's *Computer Timesharing*, the system was launched in August 1968 under the name *DelData*.

### 3 DelData in Denmark

At Dartmouth College a group led by Johan Kemeny and Thomas Kurtz had developed the Dartmouth Time-Sharing System (DTSS), financed by a grant from National Science Foundation in US. DTSS was implemented on a GE-235 computer with a GE Datanet 30 as a front-end communication system, and the combined system was named GE-265 and used GE's operating system Mark I. Each user was connected to the system from a Teletype terminal (a "TTY") via a modem and a dialed telephone line. The first programming language was Basic, a new language also developed at Dartmouth College. Later both Fortran and Algol were available to the DTSS users. DTSS was presented to the public in NY City in 1966 and became quickly a great success.

The launching in Denmark took place in August 1968 in the presence of outstanding journalists (e.g. William Cauchi, Politiken, and Uffe Elleman-Jensen, Berlingske Aftenavis) and the top management of EAC, who was also the board of directors for ØK Data). Just like the presentation three years earlier in NYC our presentation in Denmark was a great success. In Europe GE computer systems were marketed, sold and serviced by Honeywell Bull, and therefore Honeywell Bull Denmark installed the complete system and contracted the technical service and maintenance.

ØK Data had established a sales and marketing organization well before the opening and operated the system, where a user logged in from his terminal by dialing the DelData access number and typing his personal access code. The user could write and run programs in Basic and Fortran (later also Algol), run pre-stored programs and store data. ØK Data offered year after year programming courses with Basic as the most popular language. But Fortran was often chosen for bigger computational jobs such as engineering problems and statistical applications.



**Fig.1.** A customer dialing DelData

Time-sharing was based on a computer with an operating system able to service several users simultaneously. Each customer dialed the system using a low-speed

Teletype terminal with a 300 baud modem and got access to his 'share' of the computer capacity. The customer had to subscribe to the DelData Service and to one or more TTY terminals with printer, paper tape reader and punch. The subscription fee was paid monthly and depended on the usage of computer time and the number of terminals. In the early 1970s more than 100 customers subscribed to the service, and several of them had many employees using DelData. Marketing and running the system at ØK Data was done by a staff of 10-12 persons including the managers.

```
● DELDATA SERVICE
● ON AT 14:35 KBH 3/10/68 TTY 12
● USER NUMBER--E33001
  SYSTEM--ALGOL
  NEW OR OLD--NEW
  NEW FILE NAME--PROFIL
● READY.
  FIG. 2
-----
● 10 INPUT L, N, R
  20 LET Y = L*R*(R+1)+N/((R+1)*N-1)
  30 PRINT Y
  40 END
  FIG. 3
```

Fig. 2. Terminal output from DelData: The result of dialing up and printing a 4-line Basic program.

## 4 The End of the Story

In 1972 GE introduced a new version of the TimeSharing System. It was called *GE Mark III* and was based on a new series of GE 600 computers and it had increased communication capabilities. It was first installed in New Jersey, US, and later also in Holland. Soon after that ØK Data closed down the GE computers in Denmark. Consequently, when a Danish user dialed up he got access to the new system through local switches but he actually used the computer in Holland.

ØK Data continued the DelData service almost 24 years, but in 1992 GE suspended the licence agreement and therefore the service was finally closed in 1992.

## References

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