

LEO I: The Invention of Business Computing

LEO – Lyons Electronic Office

J. Lyons Background –

Founded by tobacconists Salmon and Gluckstein in fall 1887 to fill a gap in the catering market

Market for affordable quality food with some entertainment

Required intense planning in controlling the operation with highly-peaked activities and maintaining tight control of costs

Self-Sufficiency

Became a vertically integrated company

Had their own engineering works, body shops, laboratories, and laundries

Large Number of Transactions

10s of thousands daily

Very low value and a profit margin per transaction only a fraction of a penny

John Simmons

Cambridge Wrangler – highest performer in the mathematics degree

Hired 1923

Set up the Systems Research Office in the early 1930s

Travel the world looking for better way of supporting management activities

Review existing systems

Invent, test, and implement improvements

Systems Research Office

Investigated the possibility of dealing with the large number of transactions by mechanization and automation

Rejected punch card machines on the basis that they were too localized, constraining, and costly

T.R. Thompson

Another Cambridge Wrangler hired in 1932

In May 1947 along with another senior executive Oliver Standingford, visited the U.S. to see the new developments in office equipment

Found little change from before the war products
Heard of ENIAC, realized that a computer could be modified for
business data processing
Returned to England and visited Maurice Wilks at Cambridge
Convinced the board of directors to donate 3000 L to help the EDSAC
team complete their project in exchange for help building their own
computer later, the LEO I

Ernest Lenaerts

Lyons clerk who had worked with radar technology during the war
was added to the EDSAC team

LEO Project Key Members

John Simmons – Board level responsibilities
T.R. Thompson – Man in charge
John Pinkerton – Design and build the hardware
David Caminer – (manager of Systems Research Office) Design and
implement applications

Difficulties to overcome

The systems to be implemented were already well developed in non-
computer form. Achieving net savings was not going to be easy

Goal: Take care of the business process end-to-end without human
intervention after basic data has been entered

Make computer intelligent and flexible – Detect and deal with data
errors

Programming business tasks has never been done before

Caminer devised a flowchart method to programming

Needed to optimize memory and runtime by clever programming –
Minimize instructions

Every failure was logged and recorded to provide an audit trail

Mercury delay lines were used for storage

64 tubes had a limited capacity of 2048 short numbers

5000 thermionic valves

Magnetic tape drives were installed, then replaced by punch card equipment, and later reintroduced. Punch card equipment delayed many major applications from being completed

September 5th 1951

Bakery Valuations Program went live and ran every week from then on

Provided Economic Savings

Valued weekly output of each bakery

Bakery dispatches to each sales outlet

And stocks waiting dispatch

Payroll Program

Main Interest

Pilot runs of the payroll started in June 1953

Parallel runs began shortly after to check accuracy

December 24th 1953 was the first real run of the payroll program

The task of calculating an employee's payroll took an experienced clerk 8 minutes, LEO I performed the job in 1.5 seconds

Live runs became regular in February 1954 and 10,000 employees were in the system by summer

Teashop distribution, reserve stores, and tea blending programs went live near the end of 1954

Tea blending continued to run for 25 years and can still be found in recognizable form today