The First UK Branch Banking Automation

A memoir by

John Wallace

NATIONAL PROVINCIAL BANK AND PEGASUS

John Wallace helped automate the first branch of a UK Clearing Bank to a computer system in 1960 that was to become NatWest. John joined National Provincial (NP) in 1951 after leaving school at the first opportunity and learned the trade stoking the boiler and taking spare cash to the Post Office with a colleague and a truncheon. Ten years later he was one of four staff working with Ferranti on a Pegasus serving five branches in London. After taking charge of systems development in the merger with NatWest in 1968 he led IT functions in the bank at the cutting edge for nearly 30 years.

Amongst his many firsts he includes the implementation of the world's largest IBM DB2 database system, which uniquely provided the bank with a totally integrated view of each customer's relationship with NatWest. In Year 2000, shortly after leaving NatWest as head of Group IT, he made a presentation to the BCS, recalling the story behind the first branch automation.

In October 2022, John gave an interview to the Archives of IT and offered his notes as the basis for this article to complement his oral history. On the IBM DB2 project, you can read about the experience of one of our other interviewees, Rebecca George, working on the project at supplier IBM.

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BANKING IN 1960

Banking in the 1960s was dominated by the "Big 5" Clearers - Barclays, Lloyds, Midland, NP and Westminster, alongside a clutch of other organisations, including The Bank of England, Coutts, District, Glyn Mills, Martins, National, Williams Deacons, plus the Scottish and Irish banks.

NP had two subsidiaries, Coutts & Co. and North Central Wagon & Finance Co. As the decade progressed the bank developed

- 1961 Acquired Isle of Man
- 1962 Acquired District Bank making 2,160 branches and offices
- 1968 Merged with Westminster to form the National Westminster Bank

Then in 1999 NatWest was acquired by RBS

The Annual Report for 1960, dated 17.1 1961 showed a profit of £3m and £3m of capital in hidden reserves.

The financial climate was difficult with the UK having balance of Payments difficulties; bank rate at 5 to 6%and government controls on deposits.

However, business was growing, with more people opening bank accounts and using cheques.

The Payment of Wages Act 1960, also allowed employers to pay certain workers in form other than cash, including cheques and bank deposits.

The first steps were taken to introduce Credit Clearing; paying in at any bank branch to another bank's account

Chairman, David Robarts said the volume of work in branches was growing and would rise sharply, In order to service this growth in a very large number of accounts, NP placed order for a Ferranti Orion computer; hopefully for delivery towards end 1962

AUTOMATION IN NP

Automation of banking in NP can be summarised as 343 years of banking with 240 years of no automation

- 1658 Roots of constituents Union of London & Smiths Bank traced back (Thomas Smith, Nottingham)
- 1833 NP Bank of England created (Thomas Joplin, Newcastle timber merchant)

The introduction of machinery followed a path as follows

- 1900 1st typewriters in branches
- 1902 1st telephones in branches
- 1907 1st adding machines
- 1929 1st accounting machines
- 1939 Microfilming of cheques 1950's
    - Customer statements mechanised
    - Ledgers posted manually
- 1958 Proof machines (27 lists from 1 credit)
- 1960 Semi-electronic accounting machines introduced into large offices

WHY PEGASUS

In the early 1960's Ferranti had 25% of computers in the UK installed base: ICT was similar

Pegasus produced from 1956 – 1962 and was one of first low cost, medium sized, multi-purpose computers. Designers adopted the package approach - quick repair times by having replacement modules available

Ferranti invited NP to carry out experiment, using the machine and made the same offer to Westminster Bank. They implemented parallel running at the Southgate Branch in September 1960.

The Newman Street Ferranti HQ was visited by Lord O'Brien, Bank Directors many other, who were amazed that a tape from the branch could be sent to another building and the results returned. The experiment was deemed successful so NP ordered a Ferranti Orion; the most advanced machine of its time. However, there were delays in delivery so NP decided to get experience in meantime with Pegasus 2, installed in 1962 in Basinghall House.

In September 1962 New Bridge Street became the first bank Branch with bookkeeping computerised. That was followed by Strand, Lincoln's Inn, Aldwych and Park Lane, gaining invaluable experience until the Orion was handed over May 1964

THE PEOPLE

Banking was a career; from school to retirement was normal. There was one manager per branch, who had authority within his Discretionary Power (DP)and held in high respect in the community.

There was a Chief plus 5 General Managers, each with their own geographic region. Every new recruit was interviewed by the GM.

It was a flat structure and male dominated.

In 1960 NP appointed Ralph Hopps, Chief Inspector's Assistant, to set up a unit within NP to assess how computers could be used in banking. Four bank clerks were selected from branches by Ralph, trained by Ferranti as designers/programmers, built the initial bookkeeping branch systems, wrote and implemented the programs and converted the mechanised systems. He appointed two clerks from City Office that had NCR Postronic experience, Derek and Byron, then John Wallace and Dave Hughes.

We went on a programming course, using basic machine language and had total responsibility for developing systems, preparing and converting branches

We were the four most empowered clerks in NP and had lots of authority as no-one in the bank really knew what we were doing! The computer input was produced by paper tape on a daily basis as a by-product of accounting machines. Cheque reader sorters hadn't been developed then.

Derek's P60 for 60/61 showed £1123.5.7d including overtime.

THE COMPUTER SYSTEM HARDWARE

Pegasus was a large valve machine: slow with operations in millisecond. Air condition was by opening and shutting windows. Humidity was controlled by switching the electric kettle on / off and planned maintenance was several hours per day

There were two cathode ray tubes on controls at front of machine and if the program stopped binary display gave location and content.

If the reason was even parity, we'd remove offending panel and replace with spare.

Data and programs were stored on magnetic tape and read down to magnetic drum. A drum had 7K word capacity and took 16ms to rotate

There was a small immediate access store (ferrite core) of 7 blocks of 8 (39 bit) words plus accumulators to hold counts and modify instructions. Two program instructions could be held in one word

Transfers between drum and core were very slow and a clever programmer would drum optimise his program to ensure block he wanted was coming up to drum heads as the program reached an instruction to transfer

All input to computer and output was on punched paper tape. Five-hole branches created most of the input on accounting machines.

Output was fed into Flexowriters to print branch information and customer statements

BRANCH PREPARATION

Ledger sheets were carbon copies of customer statements and information we didn't want customers to see was stored elsewhere.

Kardex index set up for other - occupation, mandatory instructions etc

Alphabetical order in cabinets of sliding trays

7 digits modulus 11 account numbers allocated and shown on card 3 types of account - current, savings and loan

Vouchers needed to be personalised with account numbers in advance Done in branch using Adrema embossed plates before issue to customers Before El3b which came shortly afterwards

Another card system was set up prior to transferring to computer in account number order giving names and designation of customer.

Complimented Kardex & used for take-on of basic data

This and other data were sent to Basinghall House for punching into paper tape

On D-day branch would balance books, list all balances and send input tapes to B/H.

The whole process took about 9 months

APPLICATION SOFTWARE

- Input
    - All debits & credits had account numbers, 3 digits of cheque/symbol credit & amount
    - Paper tape was from NCR accounting machine or Addo-X adding machine.
    - Other data amendments - new account, name, address, overdraft limits, stamping limits, blocking account, statement circulation date, interest formula, products amendments, statements & details print, analysis of advances and close account were sent to B/H for keying on Flexowriters
    - Input program read in all paper tapes checking validity and wrote to magnetic tape

- Extract and Sort
    - When all tapes for a branch fed in they could be extracted and sorted for that branch's work to be processed. Allowed work to commence if some branches were late with their input. Then sorted into:
    - Account no.
    - Data amendments Credit
    - Cheque number order
    - Sort for typical 2,000 accounts branch took 20 minutes. On the later Orion - 30 secs

- Main File Update
    - The input was the last day's details of accounts plus today's sorted entries.
    - Each account was updated whether it had entries or not - ie. interest etc.
    - Output was a new main file, a magnetic tape with all the information to be printed and punched paper tape with confirmation of data amendments which was sent to the Flexowriters for printing
- Printing

- The print file produced by the main file update was input and punched paper tape produced so that the branch would receive:
- Daily input monitor of entries received and those to be resubmitted
- Entries rejected posted to Computer Rejections Account to balance books
- Confirmation of data amendments for branch checking
- Daily summary effectively updated the accounts within General Ledger and a reverse of the totals to General Cash Account thereby balancing the books daily
- Irregular listing either in excess of overdraft or stamping limit
- Once a week print of all balances - then all accounts moved since full list
- Statements and carbon copy ledgers Other outputs as and when were Analysis of advances
- Highest and lowest balances of each account
- Charges information on 15th June & December for branch to work out commission and calculation of interest
- Half year end reports for submission to Head Office

ACHIEVEMENTS

- The branch bookkeeping system formed basis of Orion system that followed and processed 100K accounts.
    - Cheque clearing system developed in parallel using IBM 1400 systems
    - Compatibility became an issue & we decided IBM 360 was way ahead
- Much of what was done in terms of standards and systems design still holds good today
- It wasn't achieved by technocrats - it was done by bank clerks. Derek, Byron and me.
- Work from early years holds good and visionaries should be proud

CONCLUSIONS / REFLECTIONS

In the '60's and 70's Banks were pushing technology to limits

In the '80's we achieved full dependency with reliability /availability / back-up / legacy systems

As of the date of the presentation in 2000 John concluded that by the '90's and into the 2000s the bank had achieved back office excellence, although customer facing was lacking and on-line and Internet service was still minimal.

Tom Abram

Archives of IT

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