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**CLASS: SOFTWARE ENGINEERING (151)**

**OBJECT ORIENTED DESIGN AND ANALYSIS**

**ATM History and evolution**

# History

The cash dispenser was born almost 50 years ago, in 1967. For many, this was the first tangible evidence that retail banking was changing; the introduction of the ATM marked the dawn of contemporary digital banking. Several lay claim to the invention of the cashpoint, including [John Shepherd-Barron](http://www.oxforddnb.com/index/101102503/John-Shepherd-Barron) and [James Goodfellow](http://en.wikipedia.org/wiki/James_Goodfellow) in the U.K.; [Don Wetzel](http://americanhistory.si.edu/comphist/wetzel.htm) and [Luther Simjian](http://www.nytimes.com/1997/11/02/business/luther-simjian-is-dead-at-92-held-more-than-200-patents.html) in the U.S.; and even engineering companies like De La Rue, Speytec-Burroughs, Asea-Metior, and Omron Tateisi. But the ATM is a complex technology. There was [no single eureka moment](http://www.smithsonianmag.com/history/atm-dead-long-live-atm-180953838/?no-ist=&preview=&page=1) that marked its arrival.

# ATM origins

The ATM finds its origins in the 1950s and 1960s, when [self-service](http://www.independent.co.uk/news/business/analysis-and-features/how-britain-became-a-selfservice-nation-2241830.html) gas stations, supermarkets, automated public-transportation ticketing, and candy dispensers were popularized. The first cash machine seems to have been deployed in Japan in the mid-1960s, according to a Pacific Stars and Stripes account at the time, but little has been published about it since. The most successful early deployments took place in Europe, where bankers responded to increasing unionization and rising labor costs by soliciting engineers to develop a solution for after-hours cash distribution. This resulted in [three independent efforts, each of which entered use in 1967](http://ideas.repec.org/p/pra/mprapa/9461.html): the Bankomat in Sweden, and the Barclaycash and Chubb MD2 in the U.K.

Cashpoints materialized thanks to a long chain of innovations. Some were of a general nature, such as steel, video-display units, plastic, magnetic tape, or (more recently) the Windows operating system. Others were purpose-made, such as the cash output mechanism and, in the 1960s, the previously non-existent algorithm that associated an encrypted PIN with a customer account. These components were developed through active collaboration between groups of bankers and engineers, each of which attempted to solve different aspects of the complex challenges inherent in the development of the ATM.

Never before had electronic equipment been so exposed to the elements. The necessity of human intervention in early systems invited further automation. For instance, they could easily jam or run out of product. They could erroneously dispense several bank notes instead of just one—all without the owner's knowledge. They were activated by plastic or paper tokens that would only activate for the operating bank and, in some cases, only that particular bank location. Some banks would keep the token in the machine and return it to the customer (by post) once the account had been debited. As a result, early ATMs were standalone, clunky, unfriendly, and inflexible. They could do one thing: dispense cash when activated by a token.

Given these constraints, it's not surprising that it took more than a decade for banks to deploy cashpoints beyond a handful of experiments. In its early days, few believed that the cashpoint would make a difference to the average consumer. In context, this prediction might have seemed sure; cashpoints appeared before credit or debit cards were a popular alternative to bills and coins, at a moment in time when most of the world's citizens worked in a cash economy. With the exception of the U.S. and France, even personal checks were largely limited to the wealthy.

# Early days of automated banking

Many experts believe that the first automated banking machine was the creation of an American inventor and businessman named Luther Simjian. Simjian held patents on all kinds of things–including an army flight simulator, a color x-ray machine, a self-focusing camera, an exercise bicycle and a teleprompter–but he was best known for his work on the Bankograph, a machine that could accept cash or check deposits at any hour of the day or night.

In 1960, Simjian managed to persuade a [New York](http://www.history.com/topics/us-states/new-york) City bank to take a few of his automatic-deposit machines. So that customers could trust that they would see their money again, there was a microfilm camera inside the Bankograph that took a snapshot of every deposit. Customers received a copy of the photo as their receipt. Still, the Bankograph did not catch on. “The only people using the machines were prostitutes and gamblers who didn’t want to deal with tellers face to face,” Simjian explained, and there were not enough of them to make the machines a worthwhile investment.

# The advent of the ATM

By the end of the 1960s, however, times were changing, and a broader segment of the population–more comfortable with the idea of self-service and more willing to trust unfamiliar technologies–was willing to give automated banking a try.

In 1967, a Scottish inventor named John Shepherd-Barron was sitting in the bathtub when he had a flash of genius: If vending machines could dispense chocolate bars, why couldn’t they dispense cash? Barclays, a London bank, loved the idea, and Shepherd-Barron’s first ATM was installed in a branch on Enfield High Street not long afterward. Unlike modern ATMs, Shepherd-Barron’s did not use plastic cards. Instead, it used paper vouchers printed with radioactive ink so that the machine could read them. The customer entered an identification code and took her cash–a maximum of £10 at a time.

The first automated banking machine in the U.S. was devised by a Dallas engineer and former professional baseball player named Donald Wetzel. Wetzel’s machine used plastic cards like the ones we use today. (Instead of radioactive ink, the cards stored account information in magnetic strips.) In September 1969, a Chemical Bank branch on Long Island installed the first of Wetzel’s machines.