# What lies behind communication?

When we use the telephone, without even realising it, we are activating a series of equipment that enables communication. They remain unseen and unnoticed, but without them, we would not be able to talk to each other or exchange data. They are machines communicating with other machines to make our lives easier.

Automatic switching — which allowed two subscribers to be connected without the mediation of an operator — began with electromechanical analogue equipment made up of rotating elements. This evolved into the so-called crossbar technology, which was still analogue and based on relay matrices, consisting of mechanical elements that allowed the terminals to be physically connected. Later, semi-electronic power stations emerged, in which control was already established by means of microprocessors. The next technological leap brought equipment where switching became fully electronic and digital, and switchboards were then turned into high-performance computers.

The digitisation of the signal enabled the transmission and switching of numeric information packets (encoded in ones and zeros); it was now possible to transfer data of all kinds, in addition to voice. Today, most digital networks have adopted the Internet protocol, which has made it possible to universalise the transmission of any message or digital content.

Along this tunnel, you will find examples of some of the equipment that has made our communications possible over the years. Take a journey through time and discover how machines have helped us to communicate more and more effectively.

## Rotary 7-A

Model of the Rotary machine built by Telefónica to demonstrate to the public the new technology that was to be implemented.

Automatic switching was the system that replaced operators, as it connected two subscriber telephones without the need to go through the switchboard. The Rotary system, created in 1915 by Western Electric, is a type of automatic switching consisting of rotating electromechanical technology. Rotary machines have been the longest lasting in Telefónica's history: they were first installed in the 1920s and the last unit was dismantled in 1996.

However, the Rotary was not the only automatic switching system. In 1889, in the United States, Almon B. Strowger invented the first automatic switching device to solve a business problem. His funeral establishment was losing customers because the telephone operator at the local switchboard was married to the owner of a competing company. This prompted Strowger to devise an automatic switching with which to avoid human intervention and favouritism in calls.