



# Hacking the Smaller Machine

Hackerando la Macchina Ridotta – [hmr.di.unipi.it](http://hmr.di.unipi.it)

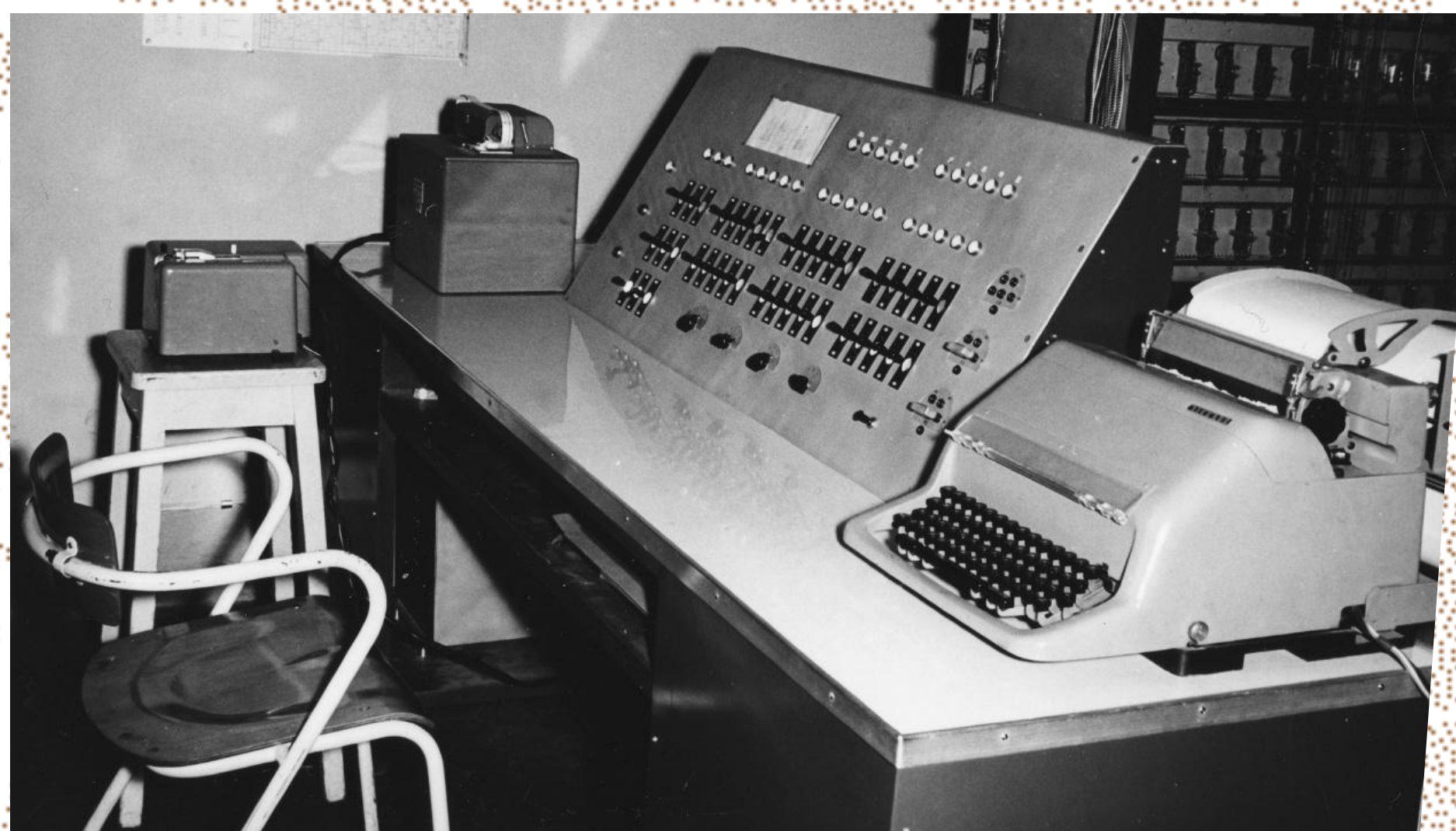


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## Rediscovering the Smaller Machine

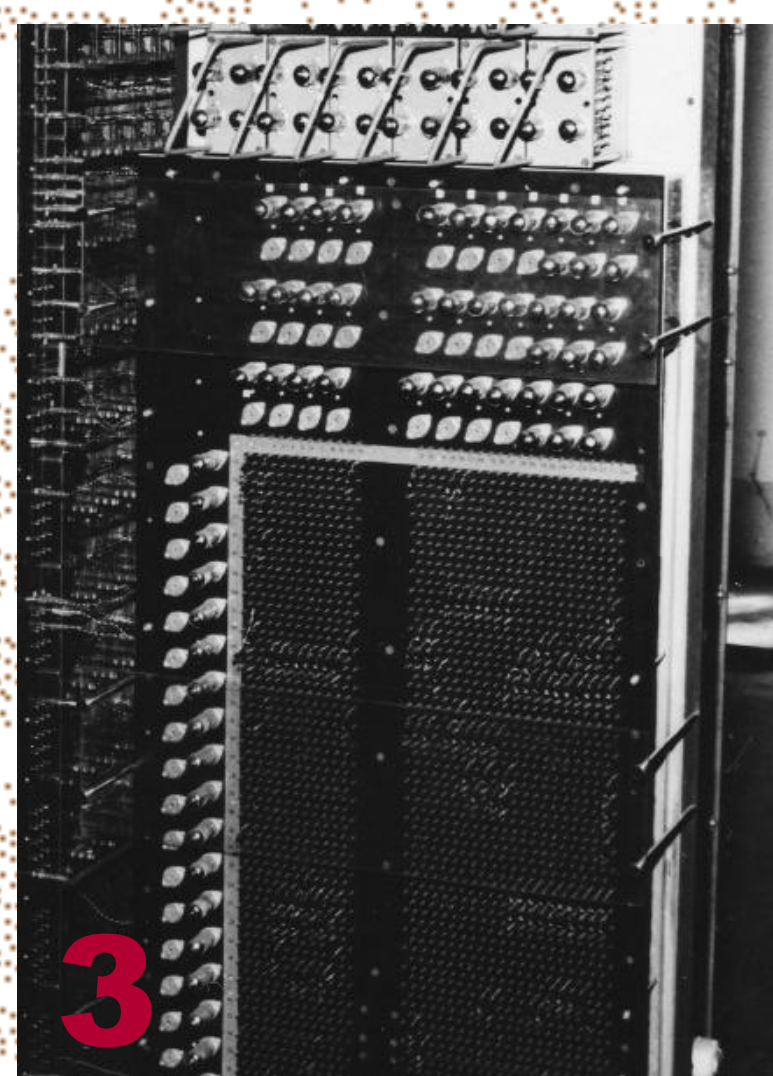
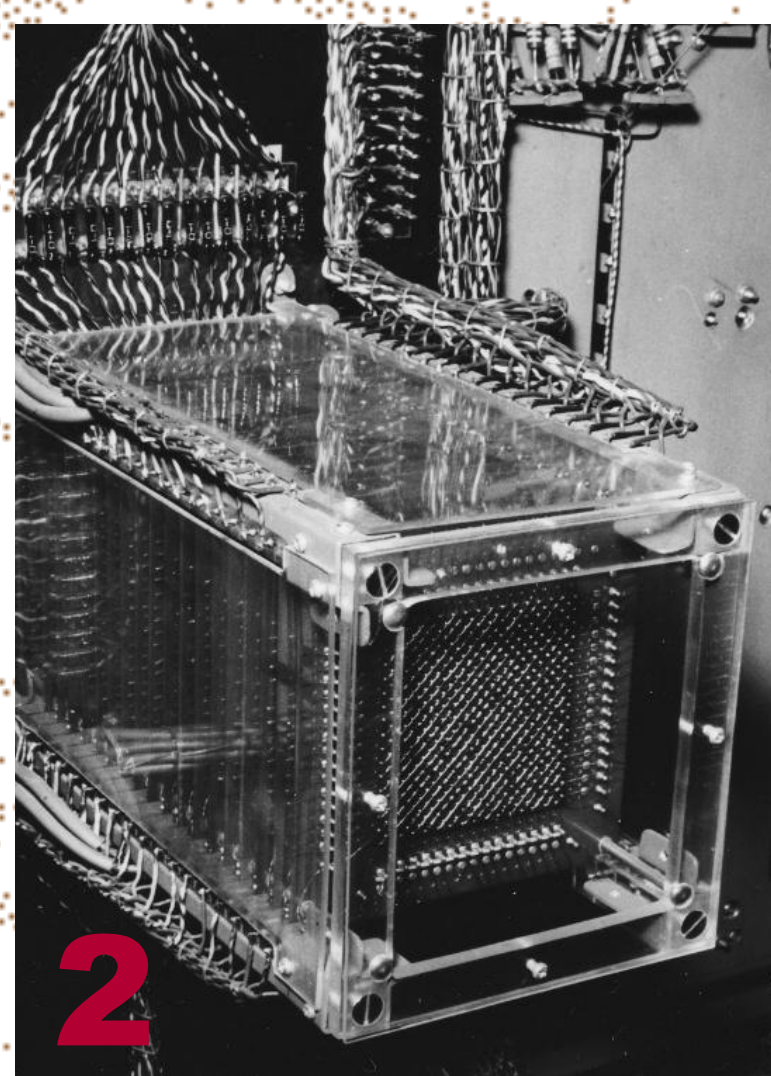
The **Calcolatrice Elettronica Pisana** (CEP, Pisa Electronic Computer) has been so far considered the first computer built in Italy. The CEP was the final outcome of a project spanning from **1955** to **1961** and carried out by **University of Pisa** and **Olivetti**.

In fact, the CEP project delivered a first computer already in **1957**, then nicknamed **Macchina Ridotta** (MR, Smaller Machine).



The impact of MR has been so far **underestimated** (often ignored) because all the previous research never attempted to recover and to study the **technical documents** of the CEP project. Exploring these details, in order to better understand the internal workings of Pisa early computers, revealed that the MR was a **much more interesting** machine than its later 1961 sister.

## State of the Art Technologies



1. **Parallel architecture.** Many early 1950s machines processed the bits of the memory word sequentially. The MR performed it in parallel.
2. **Ferrite core memory.** Wrt. the available choices (Williams tubes...) the MR was an early adopter of the soon to be standard solution.
3. **Microprogrammed control.** Adopting a MIT Whirlwind technology, the MR realised an idea proposed by the EDSAC2 team for an easy implementation of instruction codes... the very first in Europe.
4. **Very high raw performance.** Compared with the Paris IBM 704, by then considered the most powerful machine in the Old Continent, the MR had a better KIPS.