A Hidden Treasure of Computer Science Pre-History in Pisa: the CSCE Collection

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CNR - ISTI
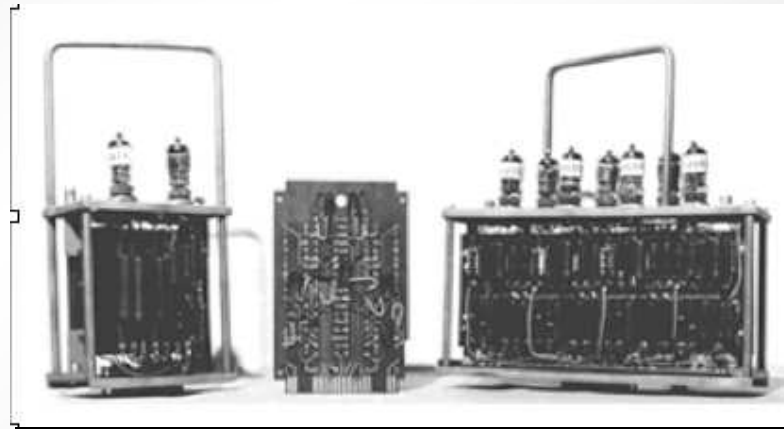
The CSCE

✓ The collection of the Centro Studi Calcolatrici Elettroniche (CSCE) contains the scientific documentation produced by the staff and associate members of the Center from 1954 to 1968

✓ The Center was established by the University of Pisa with the specific purpose of designing and building what later became the first electronic computer entirely built in Italy, the CEP (Calcolatrice Elettronica Pisana)

✓ The collection documents the various steps in the realization of the CEP, from the first realization of a reduced-functionality prototype ("reduced machine" – RM) to the design and implementation of the full machine (CEP)

Calcolatrice Elettronica Pisana: from idea to project

✓ At the beginning of the '50s the local government granted the University of Pisa a significant amount of money to be used for the realization of an important scientific device

✓ In 1954 Nobel laureate Enrico Fermi suggested that the amount should be used to realize an electronic computer, the first entirely built in Italy

Pera di Fassa (Trento) 11 Agosto 1954

Prof. Avanzi
Magnifico Rettore
Università di Pisa

Caro Professore,

in occasione del mio soggiorno alla Scuola di Varenna i professori Conversi e Salvini mi hanno accennato la possibilità che l'Università di Pisa possa disporre di una somma veramente ingente destinata a favorire il progresso e lo sviluppo della ricerca in Italia.

Interrogato circa le varie possibilità di impiego di tale somma, quella di costruire in Pisa una macchina calcolatrice elettronica mi è sembrata, fra le altre, di gran lunga la migliore.

Essa costituirebbe un mezzo di ricerca di cui si avvantaggerebbero in modo, oggi quasi inestimabile, tutte le scienze e tutti gli indirizzi di ricerca.

Mi consta che l'Istituto per le Applicazioni del Calcolo, diretta dal prof. Picone, ha in corso di acquisto una macchina del genere . Non mi sembra però che questa circostanza diminuisca il bisogno che di tale macchina verrà ad avere un centro di studi come l'Università di Pisa. L'esperienza dimostra che la possibilità di eseguire con estrema speditezza e precisione calcoli elaborati crea ben presto una sì grande domanda di tali servizi che una macchina sola viene presto saturata. A questo si aggiungono i vantaggi che ne verrebbero agli studenti e agli studiosi che avrebbero modo di conoscere e di addestrarsi nell'uso di questi nuovi mezzi di calcolo.

Con molti cordiali e distinti saluti.

(Enrico Fermi)

RM and CEP

- ✓ The CSCE was established in 1955 and the project started

- ✓ The RM was completed in 1957 and, until the end of 1958, was used in calculi of considerable complexity

- ✓ The RM was conceived as an integral part of the CEP, which inherited from it about half of its component parts

- ✓ The construction of the CEP was completed at the end of 1960 and started to be used in 1961

- ✓ The CEP remained active for 7 years and was a testbed for research in a new discipline later called Computer Science


RM

CEP
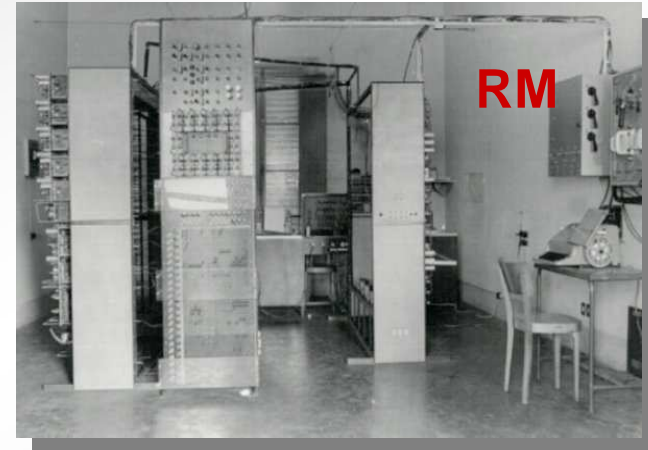
The most important historical events

1961   CEP's Inauguration

1962   The CSCE is declared a "national center of interest" of the CNR

1964   The institute CNUCE is established with the aim to supply scientific calculus services

1968   The CSCE becomes the Institute for Information Processing of the National Research Council (IEI-CNR) with the aim to promote and carry out computer science research

1969   The first curriculum in Computer Science is established at the University of Pisa

1974   CNUCE becomes a CNR institute

2002   IEI and CNUCE are merged into the Institute for the Science and Technologies of Information "A. Faedo" (ISTI-CNR)

1961

The collection

The collection consists in a total of 389 documents originally divided into Series I (1954-1965) and Series II (1962-1968), and composed of:

- ✓ Publications
  - – national and international journal papers
  - – national and international conference papers

- ✓ Internal memos

- ✓ Technical drawings related to the CEP
  - – logical schemes
  - – schemes of electronic circuits
  - – mechanical diagrams
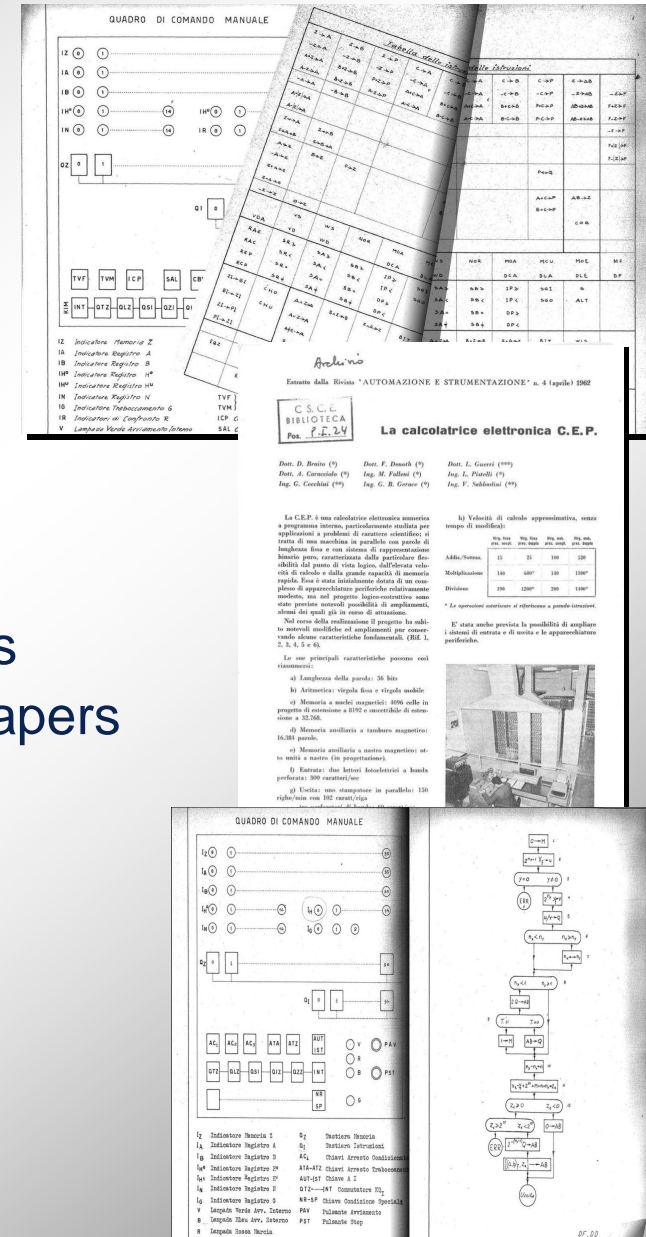
The collection analysis

From 1968 onwards the documentation produced by the CSCE was stored in paper copy at the library of IEI-CNR / ISTI-CNR. The document analysis has shown that:

- ✓ The set of CSCE documents grew spontaneously over the years, with the "naturalness" and "originality" typical of an archival fund, and with the only aim to record the progress of CSCE studies and activities

- ✓ Only later on, the fund was transformed into an organized institutional collection

The archiving procedures

✓ The material has been reorganized using a bibliography edited by CSCE and printed in 1969, called "Documentation 2"

✓ The original sub-division into Series I and II and the original document identification codes have been kept in the new records

✓ The semantic indexing has been carried out by associating the documents with free terms and terms from "The ACM Computing Classification Systems"

✓ To each bibliographic description we have associated a file obtained from the digitization of the paper copy kept in archive

✓ The digitization has been particularly difficult because of the physical conditions of the documents: faded ink, torn paper, very large format of the technical schemes
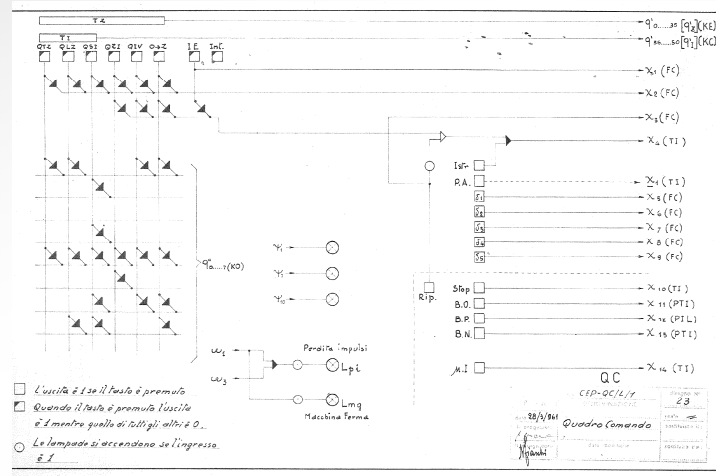
# Technical schemes
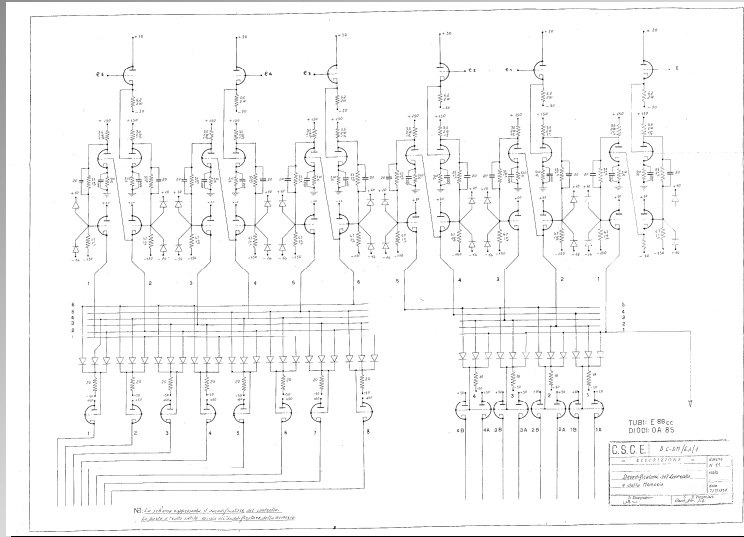
MR - Control and memory decoder

MR- Memory

CEP - Control board

The computerized management systems

✓ The Open Access archive CSCE has been created and is managed by the systems Puma and MetaPub (both developed by the ISTI Library)

✓ PUMA is a software infrastructure, user-focused and service-oriented. It presently manages 32 CNR institutional repositories, growing daily

The ICT Collection

1143   241
1689
235
9743

☐ ISTI ☐ IIT ☐ ILC ☐ IMATI ☐ ISSIA
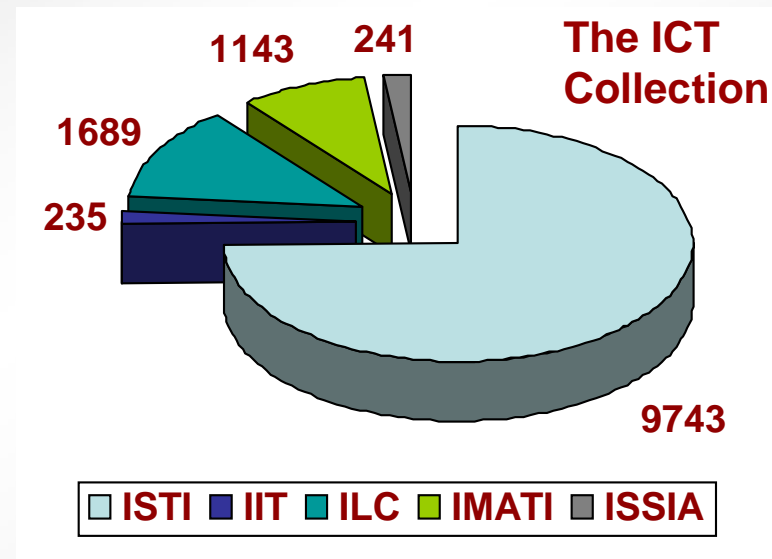
✓ MetaPub also opens PUMA repositories to the OAI world, by implementing the OAI-PMH protocol

✓ The CSCE collection is part of a larger project, the cataloguing and digitization of the heritage of the CNR institutes in the Information and Communication Technology area

The CSCE Collection Web site

The CSCE collection is accessible
from its own web site
http://csce.isti.cnr.it
from PUMA interfaces
http://puma.isti.cnr.it
from MetaPub interfaces
http://leonardo.isti.cnr.it/metapub

✓ The Web site provides general information about the collection

✓ In the section "Bibliographies" the analytical description of the two series' contents is presented

✓ The search and browsing tools available from the CSCE site are endowed with advanced search functionality

Conclusion

We have created this Open Access digital archive in order to make available "a little historical treasure" that had long remained hidden, and to pay homage to an enterprise of great scientific value, and of great human value too.

The CEP project was a symbolic effort of reconstruction and recovery by those who invested in that work, during a period of Italian history in which the wounds of war were not yet completely healed. It was a symbol of organizational capacity, a demonstration of skill by the graduates and technicians that, all Italians, planned and built a calculator that was the object of admiration throughout Europe

(translation from G. De Marco. La calcolatrice elettronica pisana: le origini dell'informatica in Italia. Tesi di laurea in Scienze dell'Informazione. Pisa, IEI-CNR, giugno 1996, p.94)