UNIVERSITÀ DI PAVIA

**Dipartimento di
Ingegneria Industriale
e dell'Informazione**

From 3 microns to 3 nanometers (in a blink of an eye)

28 Aprile 2022, ore 16:00 - Aula EF2

Zoom Link per connessione remota

Domenico Rossi, STMicroelectronics

In 1947, Bardeen and Brattain successfully demonstrated at Bell Labs the theory of William Shockley and paved the way to the bipolar transistor.

In 1958, Jack Kilby successfully demonstrated at Texas Instruments the first working example of an integrated circuit (IC). Robert Noyce one year later realized at Fairchild Semiconductor the first Monolithic IC made on Silicon, paving the way to what was then called Microelectronics. NASA's Apollo Program was the largest single consumer of integrated circuits in early sixties.

In the very same years, Mohamed M. Atalla and Dawon Kahng invented the Mosfet at Bell Labs and then de PMOS and NMOS fabrication processes. These processes were later combined and adapted into the complementary MOS (CMOS) process by Chinh-Tang a Frank Wanlass at Fairchild Semiconductor.

In mid-sixties, while Gordon Moore, co-founder of Fairchild Semiconductor and Intel, posited a doubling every two years in the number of transistors per integrated circuit (a prediction still alive which become known as a "Law"), other technologies upon silicon technologies, but not scaling started to enter.

Since then, regardless of if inspired by a self-fulfilling prophecy such as the "Moore Law" or by the insatiable desire to walk different avenues such as for the "More than Moore", Microelectronics contributed to noticeable changes in the living of the human being.

Stories where the ST, as one the major European player, had a starring role.

In May 2021, ST has been awarded with a prestigious IEEE milestone recognizing the invention the BCD technology. A technology that was conceived in mid-eighties revolutionized all the Smart Power Applications. In the same labs, new products are nowadays exploiting the most advanced FinFet technology.

In between many success stories, some mistakes (indeed a few and all of them very instructive), solutions in search of a problem to solve and sometimes with unexpected ending (searching a new route to India……)

Examples will show how strange and different the paths of innovation could be, and how exciting Microelectronics is.