ISA BUS (Industry Standard Architecture)

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INTRODUCTION

- **BUS**-a communication system that transfers data between components inside a computer, or between computers.
- **DISTRIBUTED NETWORK SYSTEM**-a number of systems on a common bus or a set of buses, where each system interfaces to a bus.
- Embedded systems are distributed and networked using a serial bus, parallel bus or a wireless protocol software and appropriate hardware
- Each bus communicates as per a protocol.
- PRTOCOLS-UART,I2C,CAN,USB,WiFi,Bluetooth,ISA,PCI,PCI/X,etc

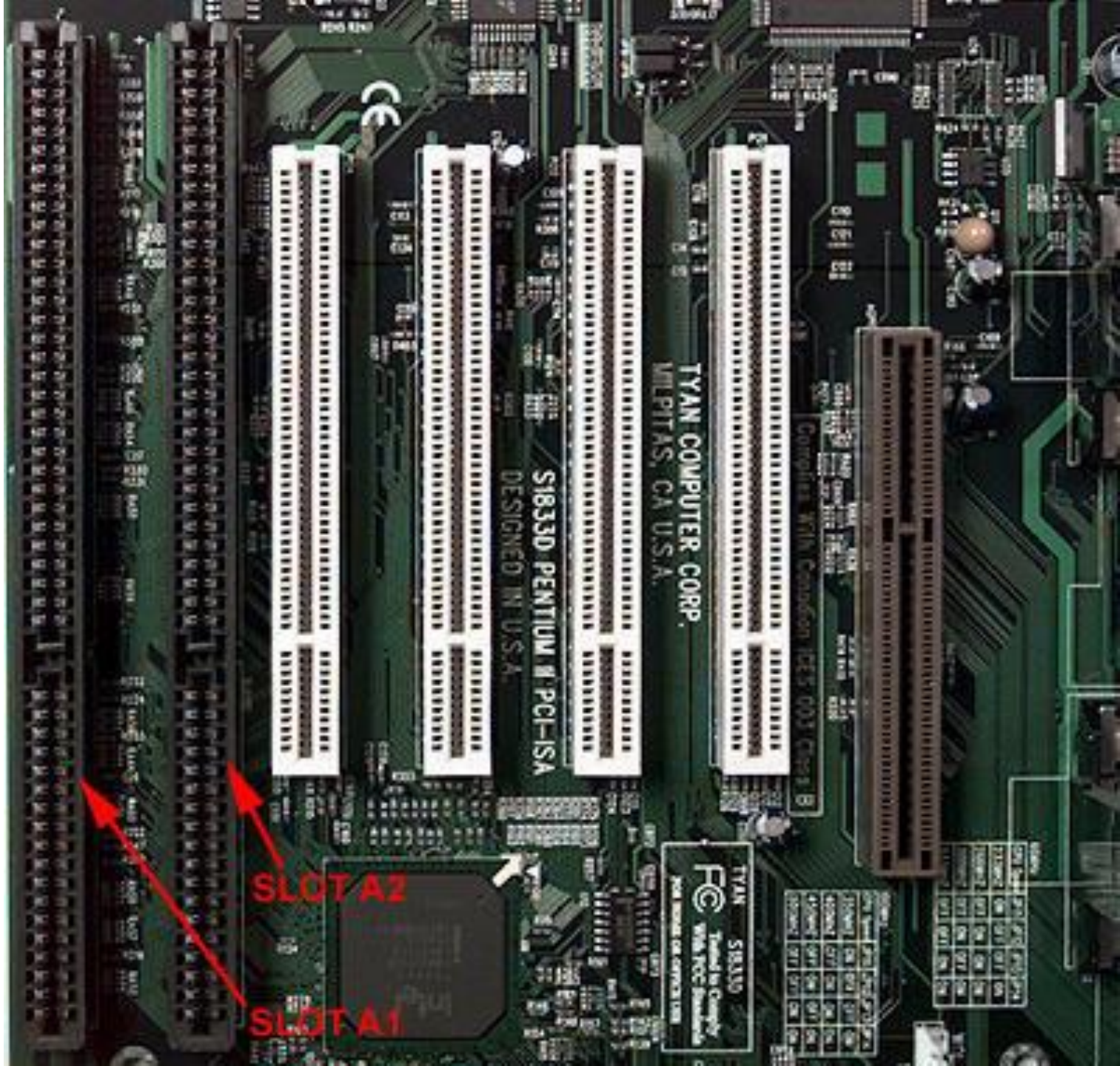
Industry Standard Architecture bus (ISA bus)

- An Industry Standard Architecture bus (ISA bus) allows additional expansion cards to be connected to a computer's motherboard.
- It is a standard bus architecture for IBM compatibles.

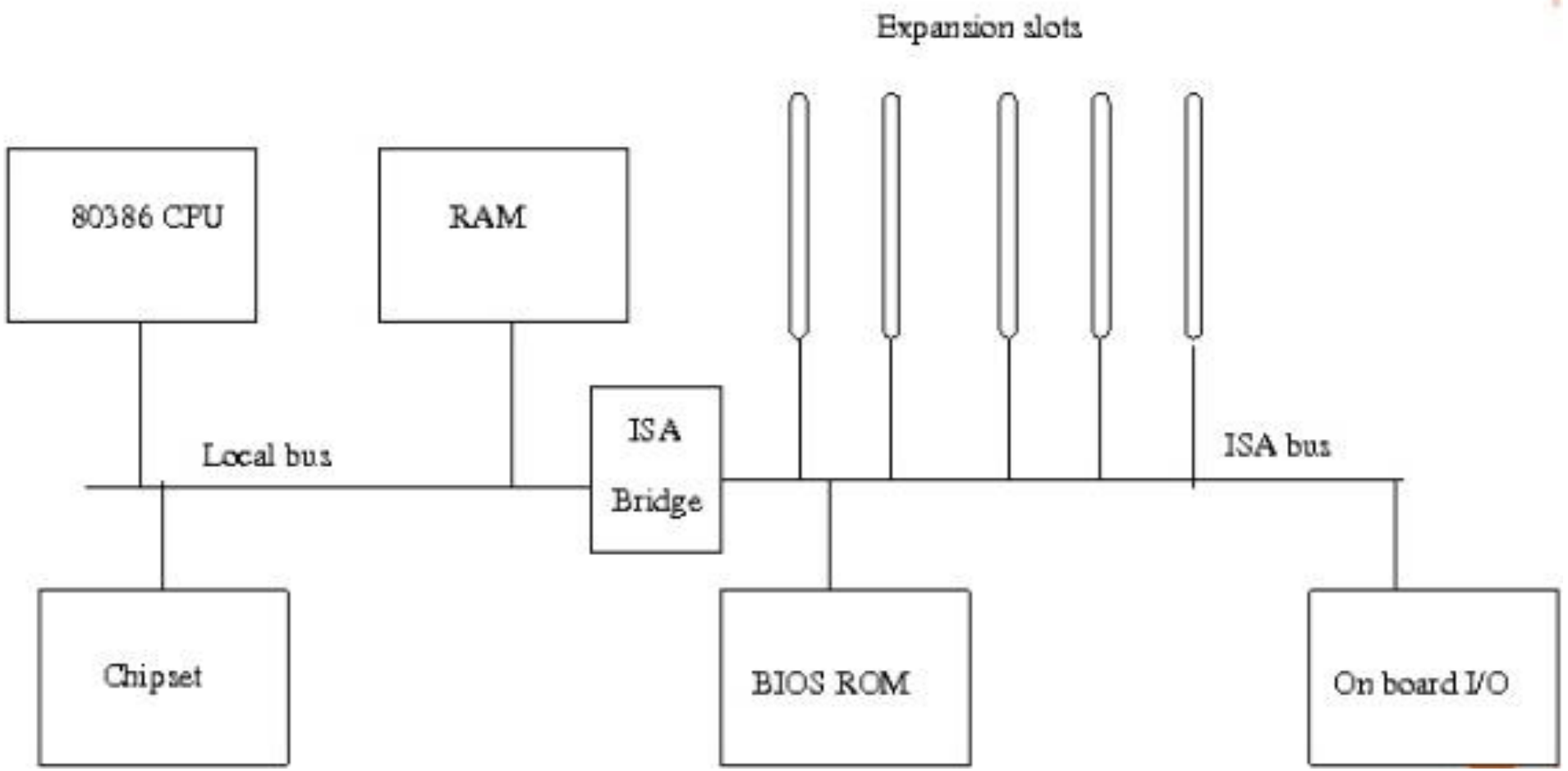
Introduced in 1981, the ISA bus was designed to support the Intel 8088 microprocessor for IBM’s first-generation PC.

- It was officially recognized as standard in 1987 when the IEEE formally documented standards governing its 16-bit implementation.
- In the late 1990s the faster peripheral component interconnect (PCI). Soon afterwards, use of the ISA bus began to diminish, and most IBM motherboards were designed with PCI slots.
- Although there are still a few motherboards being made with ISA slots, these are generally referred to as the legacy bus motherboards

ISA BUS ON MOTHERBOARD



BLOCK DIAGRAM



Features

- 24-bit address lines and 16 bit datalines.
- It supported 16-bit peripheral devices.
- Five devices with 16-bit interrupt request (IRQ) could be connected at the same time or 6 devices that use one 8-bit IRQ each.
- Also, three additional devices could be connected parallel to five devices with 16-bit IRQ.
- 16-bit direct memory access (DMA) channel. 4 devices may use one 8-bit DMA channel each, while up to 3 devices can use one 16-bit DMA channel each.
- Clock operates at 8 MHz and 2 to 8 clock cycles are needed to transfer data.

ISA Versions

8-bit ISA BUS

- Buswidth - 8 bit
- Compatible with 8 - bit ISA
- Pins - 62
- Power - ±5, ±12
- Clock - 4.77MHz

16-bit ISA BUS

- Buswidth - 8 bit
- Compatible with 16 - bit ISA
- Pins - 98
- Power - ±5, ±12
- Clock – 8.33HHz

ISA Vs PCI

Bus Type	Bus Width	Bus Speed	MB/sec	Advantages	Disadvantages
ISA	16 bits	8MHz	16 MBps	low cost, compatibility, widely used	low speed, Jumpers & DIP switches. becoming obsolete
PCI	64 bits	133 MHz	1 GBps	very high speed, Plug & Play, dominant board-level bus	incompatible with older systems, can cost more


THANKS FOR
WATCHING!