Embedded systems on a chip (Soc) and use of VLSI Design
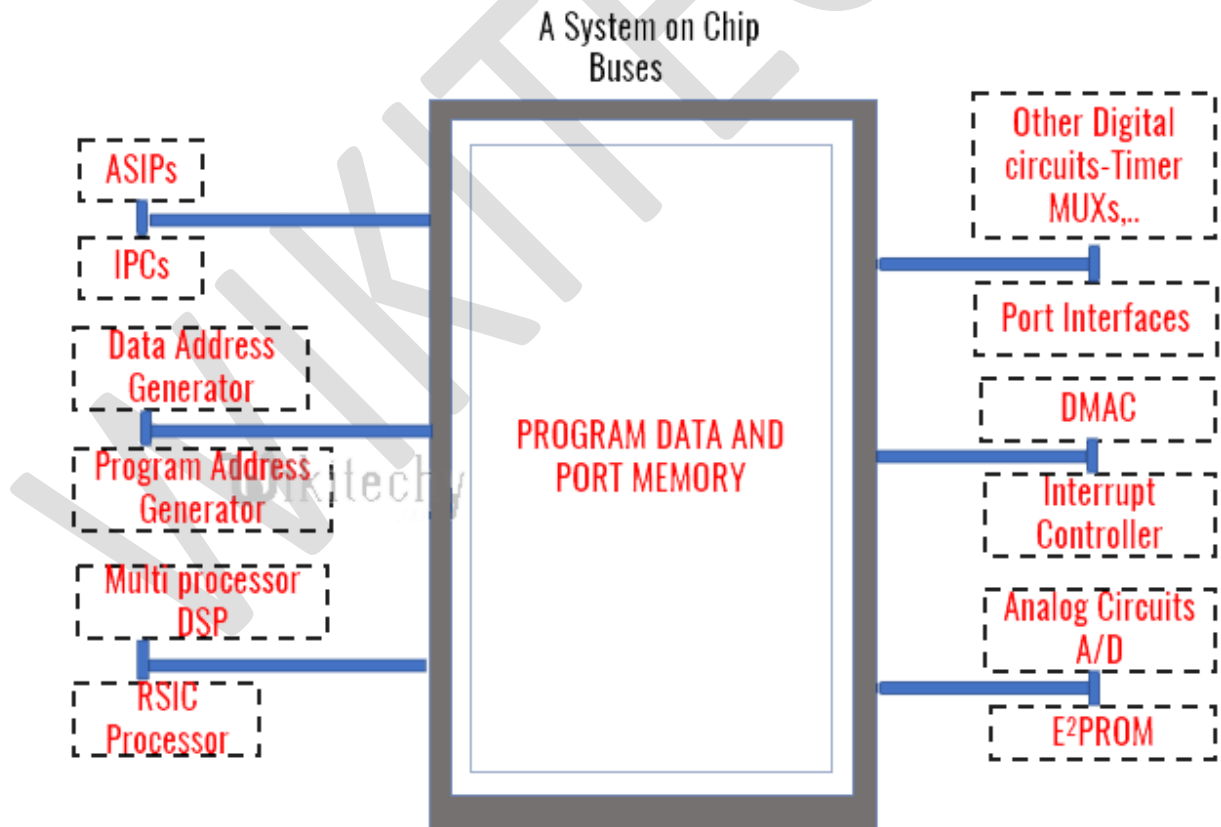
VLSI chip

- Integration of high-level components.

- Possess gate-level sophistication in circuits above that of the counter, register, multiplier, floating point operation unit and ALU.

System on chip (SoC)

- SoC is a system on a VLSI chip that has all needed analog as well as digital circuits, processors and software, for example, single-chip mobile phone.

New Innovation Example Mobile phone on SoC

A System on Chip Buses

ASIPs

IPCs

Data Address Generator

Program Address Generator

Multi processor DSP

RSIC Processor

PROGRAM DATA AND PORT MEMORY

Other Digital circuits-Timer MUXs,..

Port Interfaces

DMAC

Interrupt Controller

Analog Circuits A/D

E²PROM

System on Chip

Embeds:

- Multiple processors
- Memories
- Multiple standard source solutions (IP Cores)
- Logic and analog units

Embedding Microprocessor

- General Purpose Processor (GPP) microprocessor can be embedded on a VSLI chip.

Embedding an ASIP - Application-specific instruction set processor

- Processor with instruction set designed for specific application on a VLSI chip for example, microcontroller, DSP, IO, media, network or another domain specific processor Embedding a Microcontroller core
    - 68HC11xx,
    - HC12xx,
    - HC16xx8051,
    - 80251 PIC 16F84 or

- o 16C76, 16F876 and PIC18Microcontroller
- o Enhancements of ARM9/ARM7 ARM
- o Cortex M3 from Philips, Samsung and ST Microelectronics

Embedding a DSP Core - Digital signal processor (DSP)

- DSP for mobile phones, for example, OMAP (Open Multimedia Applications Platform) of Texas Instruments use the effective power dissipation methods of dynamic switching both of power supply voltage and operating frequency of the CPU core.
- Filtering, noise cancellation, echo elimination, compression and encryption

For More Details Click Here:

https://www.wikitechy.com/tutorials/embedded-systems/embedded-systems-on-a-chip-and-use-of-vlsi-design