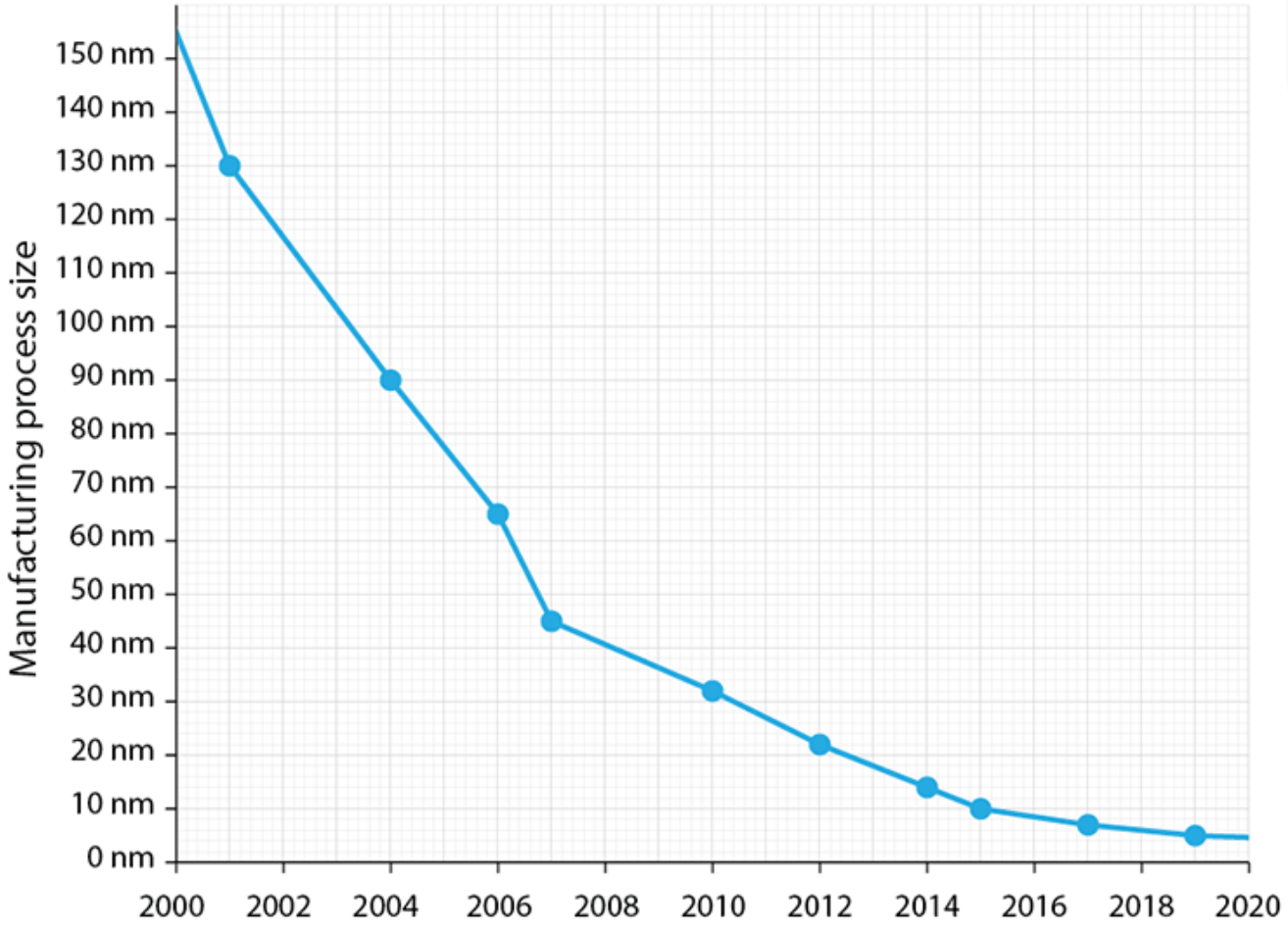
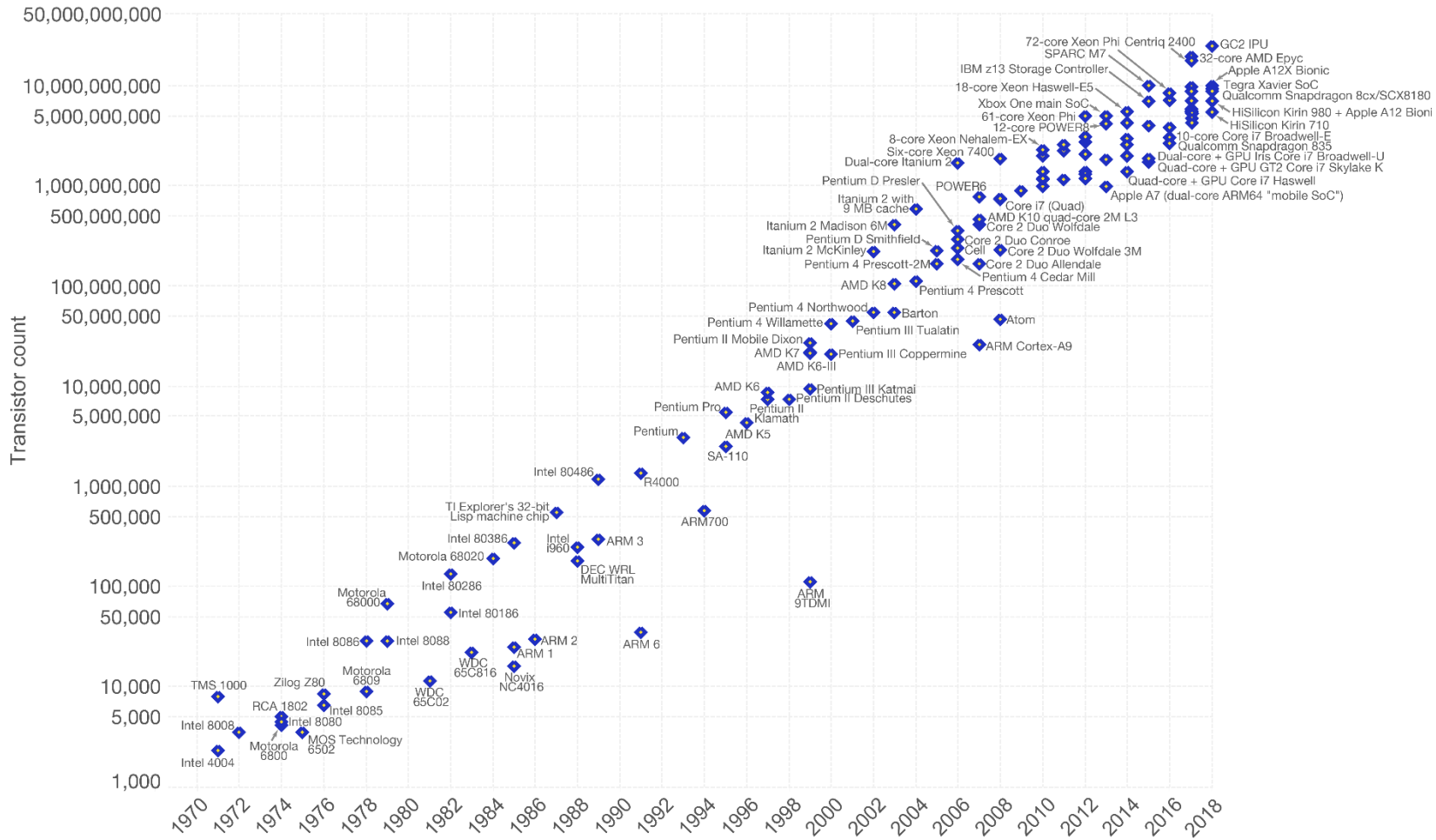
Technology Challenges



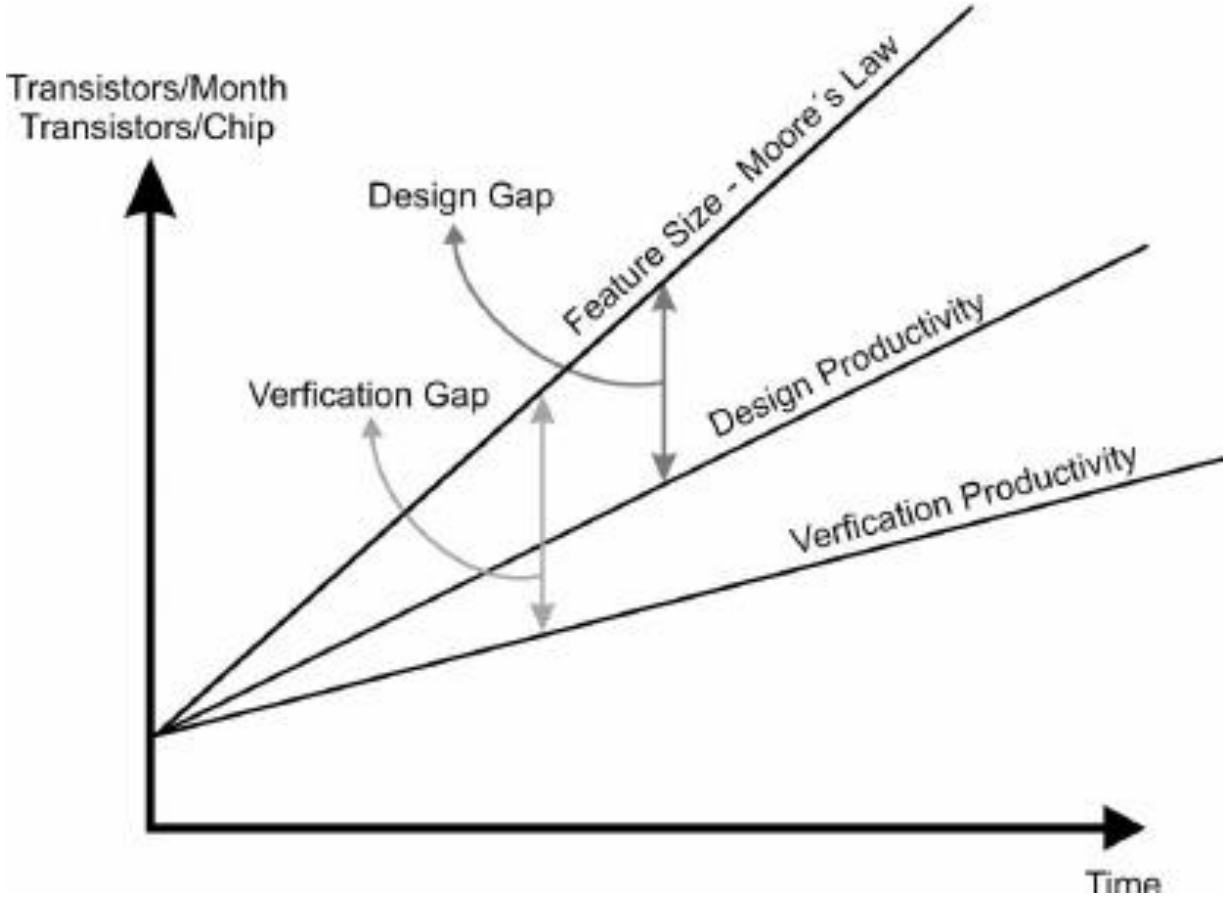
- Timing closure
- Capacity
- Physical properties

Technology Challenges



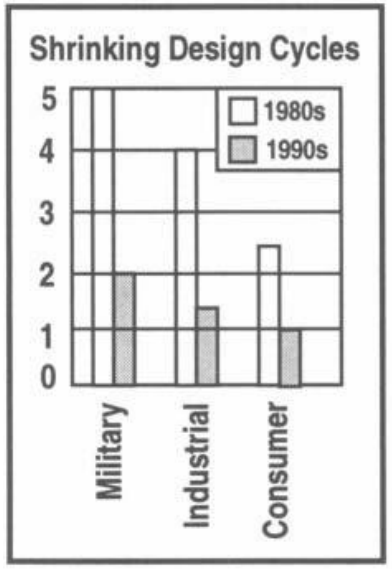
Technology Challenges

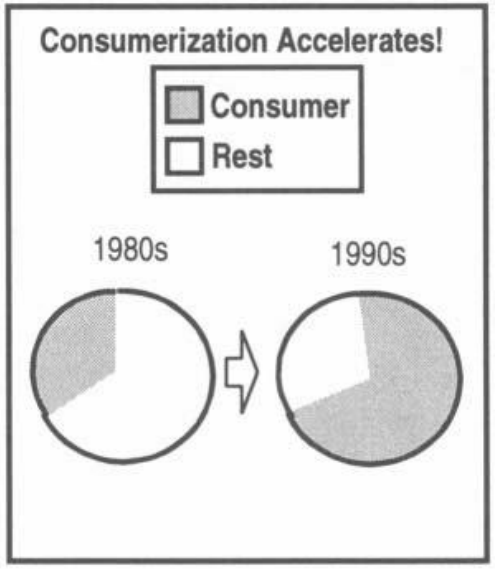
- **Design Productivity Gap**

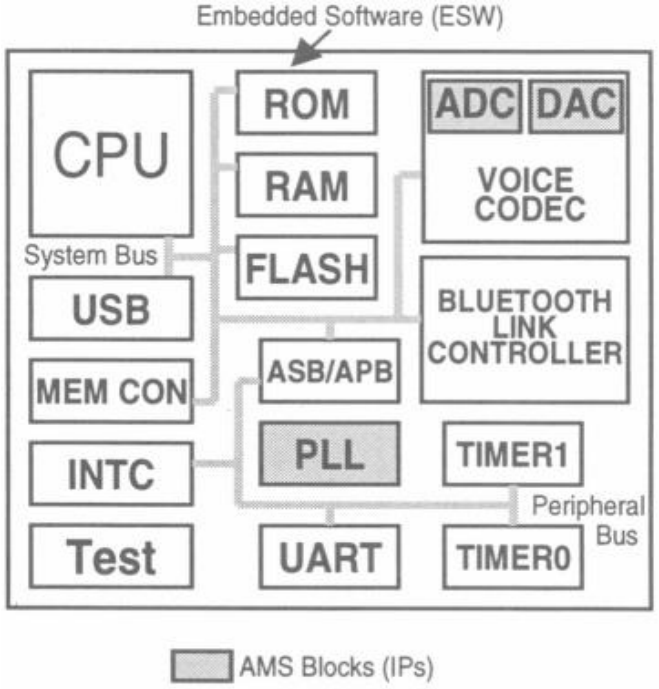


Technology Challenges

- **Time-to-Market Trends**
  - These technology and market challenges are having a dramatic impact on verification methodologies and tools







- **SOC Technology**
  - ✓ design disciplines coexisting within a single design

topographical representation of Bluetooth design

Why GPU in Phone?

- Graphics Processing Units (GPU) are designed to accelerate the large number of multiply and add computations performed in graphics rendering.
- Mobile gaming global revenue is increasing day by day
- These feature rich, high resolution games look pleasant to eyes but are extremely '*hardware hungry*'.
- A single game scene rendering(drawing) on screen involves complex memory-intensive geometric and arithmetic operations.
- Graphics Processor Unit (GPU) is a dedicated hardware to offload CPU of these efforts.

Graphics Processor Pipeline

Application running on CPU defines/modifies a scene based on UI Inputs/animation to GPU.

- Geometry Transformation
- Camera Transformation
- Lighting
- Clipping
- Viewport Transformation
- Rasterization