

## Implementation Technologies

**Exercise 1:** Would you use hardware or software to implement:  
A one-off digital clock? A watch whose battery must last for years?  
A controller for a kitchen appliance? A calculator? An Ethernet interface?  
For Cryptocurrency “mining”? For an aircraft’s automated landing system?

**Exercise 2:** What improvement in number of transistors per unit area would be achieved by reducing the feature size from 7 nm to 5 nm? Approximately how many 5x5 mm die fit on a 300 mm wafer? How many 200x200 nm gates fit on the die?

**Exercise 3:** Would you use a PLD or ASIC for: A project that had to be completed within a month? That would be expected to sell 100 million units? Whose complete requirements aren't known? A state-of-the-art general-purpose CPU?