VLSI Design is Like Art

• If VLSI layers are like paint…
  Then chips are works of art
  (and VLSI designers are artists)

• Many factors should be taken in to account when selecting the design approach used
  – Time required to complete the work (time to market)
  – Application, performance, power requirements
  – Skill of the designer/painter
Full-Custom Design

• Full control of range of colors
• Full control of size of paint regions
• Full control of paint boundaries
Standard Cell Design

- Limited range of colors
- Limited control of size of paint regions
- Limited control of paint boundaries
Standard Cell
Standard Cell

Source: Mosaic Tile Supplies
Gate Array Design

- Limited range of colors
- No control of size of paint regions
- No control of paint boundaries
Gate Array
Gate Array
Gate Array
Gate Array
Gate Array
Gate Array
FPGA Design

- Very limited range of colors (RGB)
- No control of size of paint regions
- No control of paint boundaries
FPGA