

# VLSI Design is Like Art

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- 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

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- Full control of range of colors
- Full control of size of paint regions
- Full control of paint boundaries

# Full-Custom



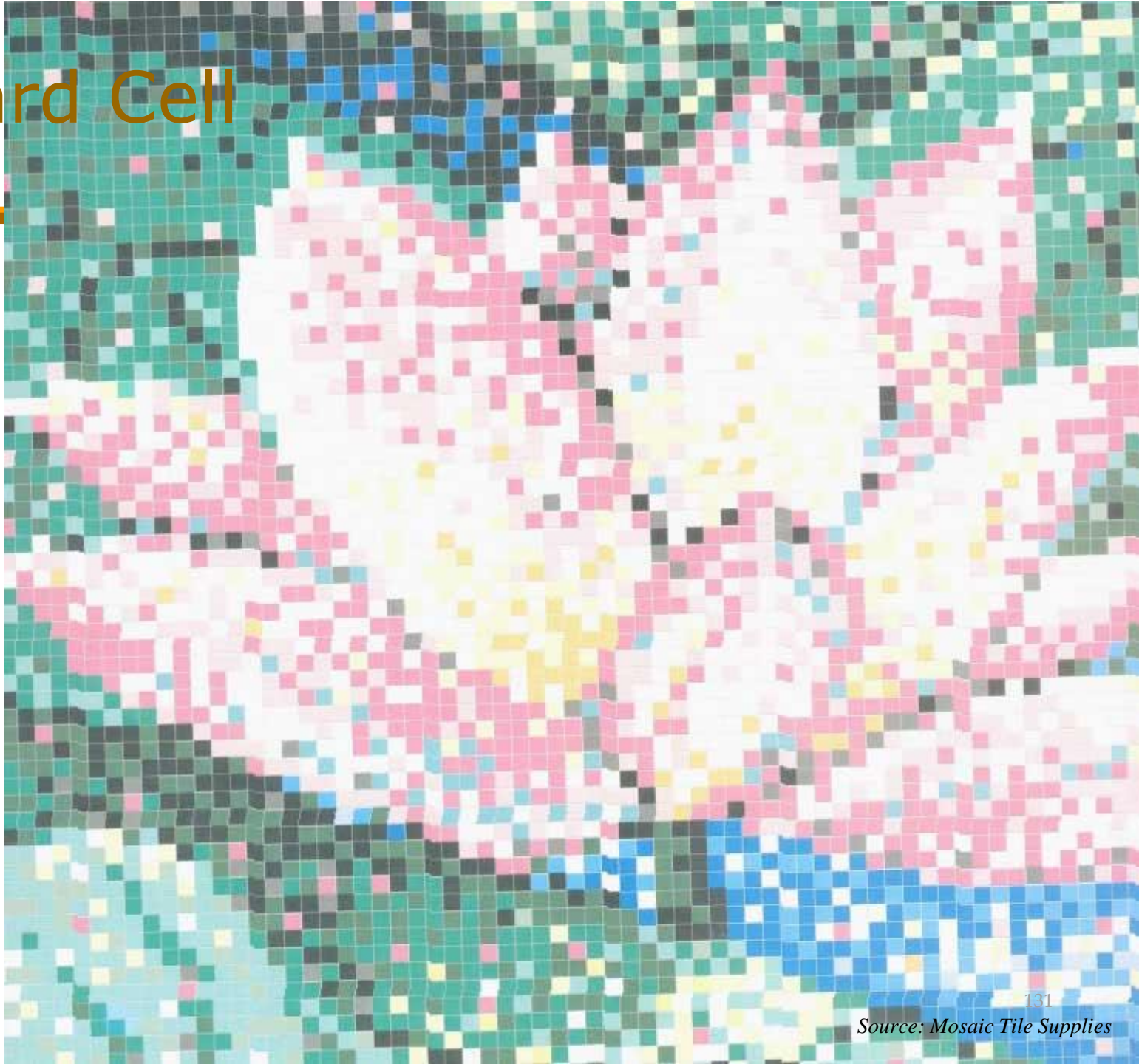
Rembrandt van Rijn, 1642, Rijksmuseum

# Standard Cell Design

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

# Standard Cell



Standard Cell







*Saint Peters Basilica, Vatican, Rome*



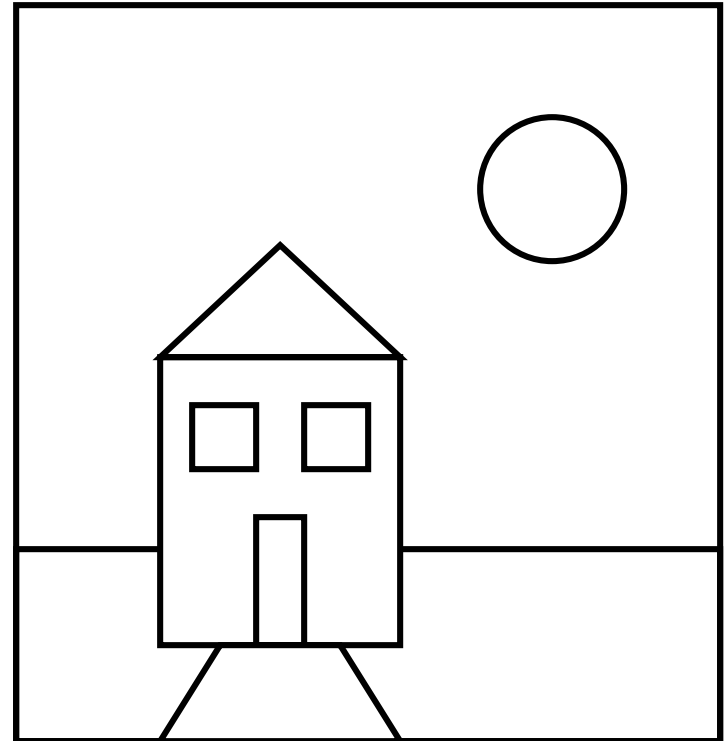
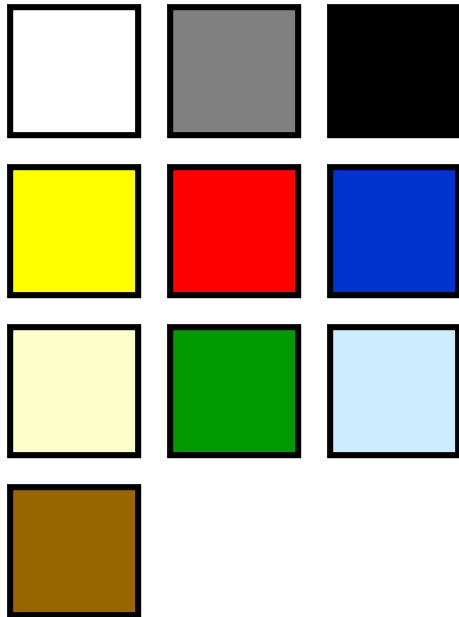
# Gate Array Design

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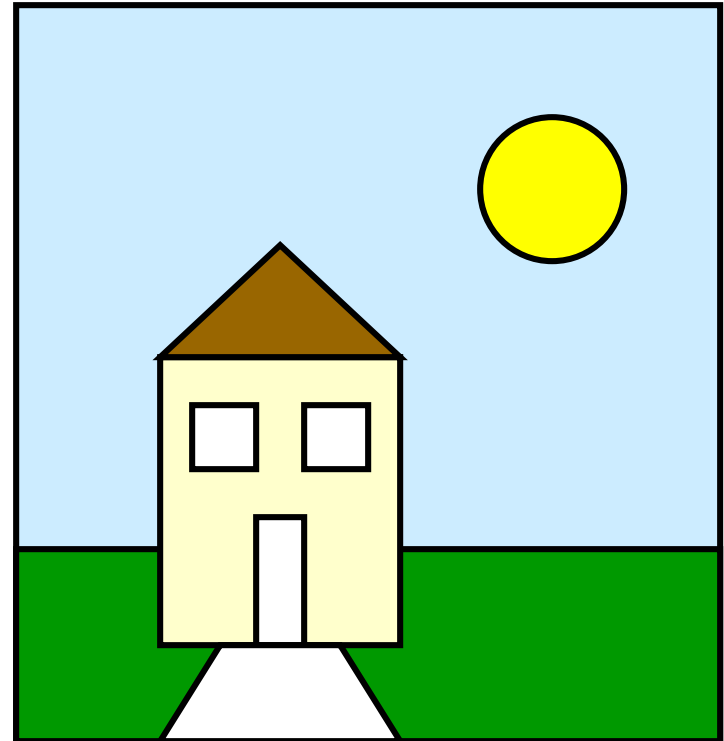
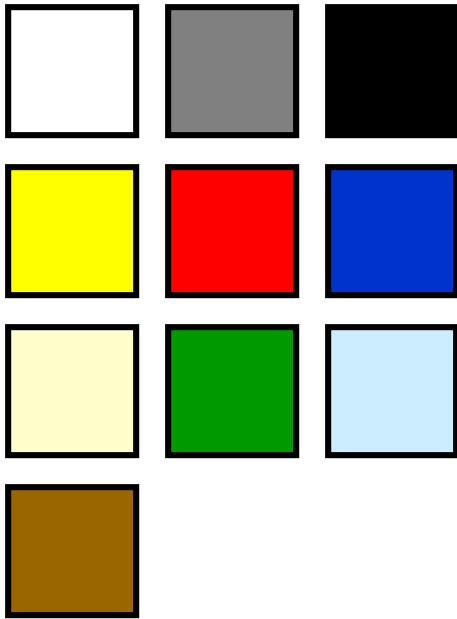
- Limited range of colors
- No control of size of paint regions
- No control of paint boundaries

# Gate Array

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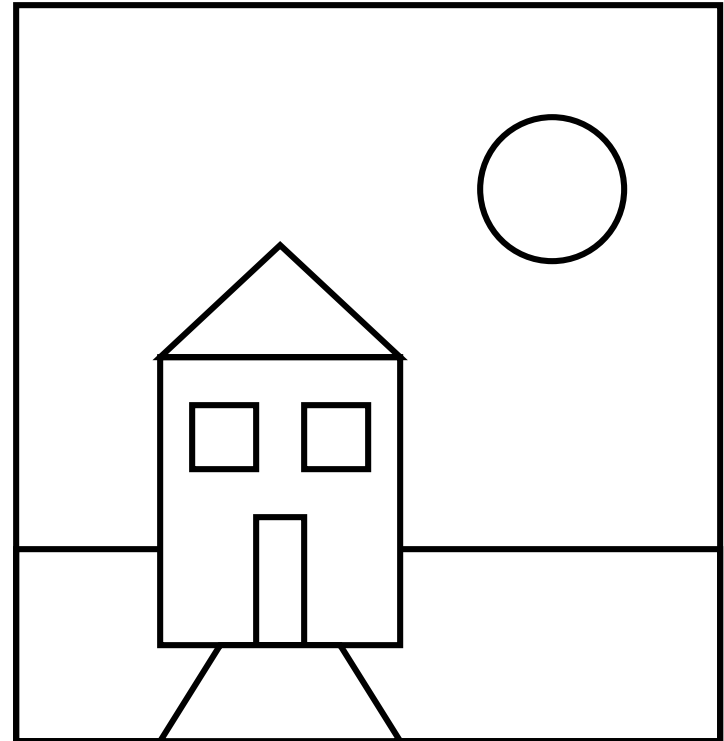
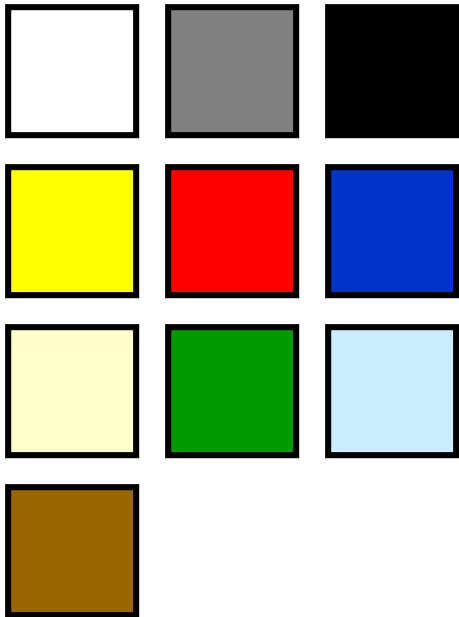


# Gate Array



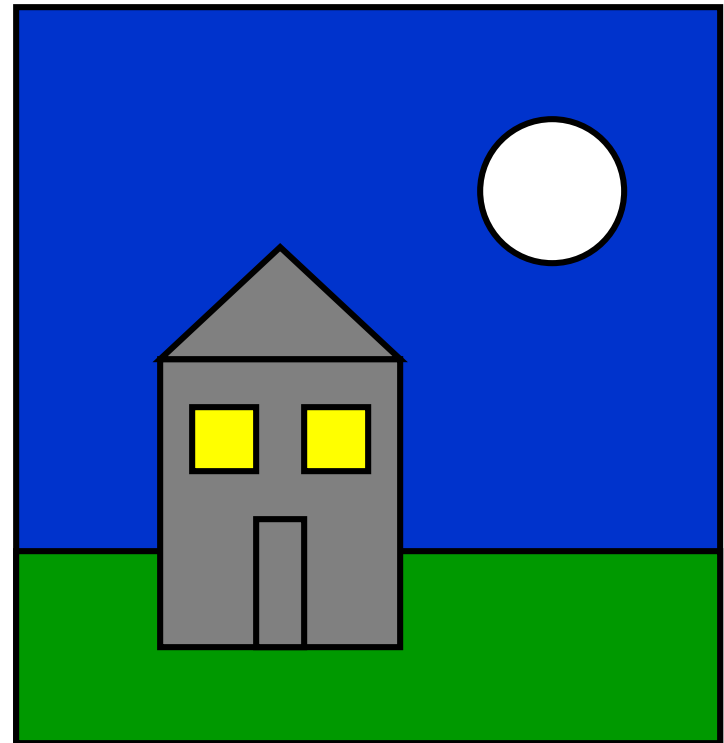
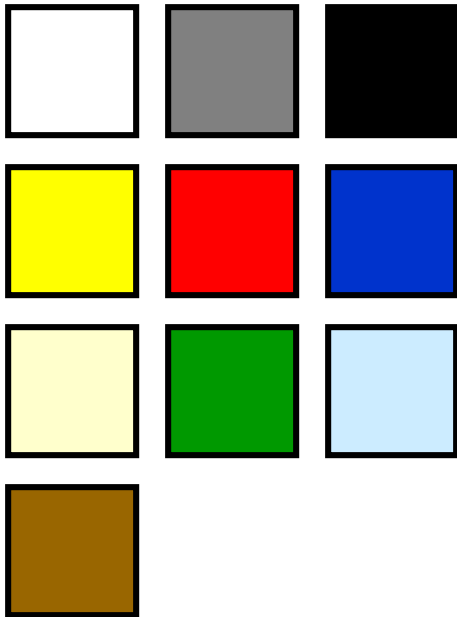
# Gate Array

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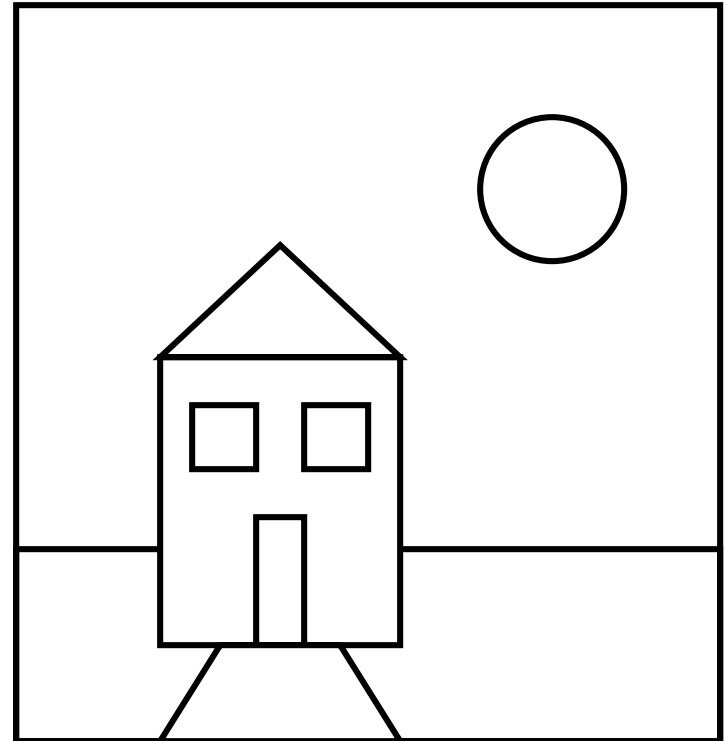
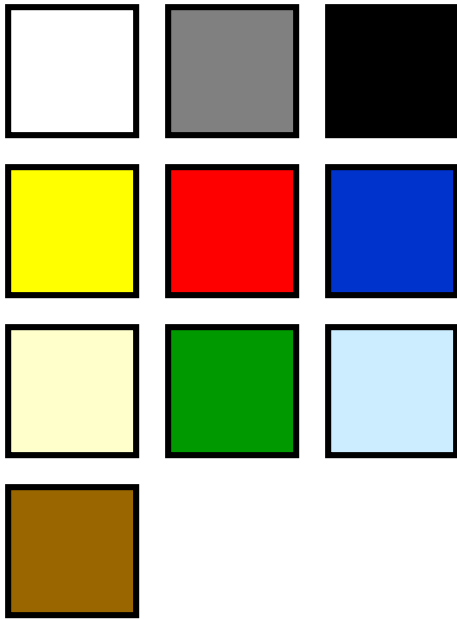
# Gate Array

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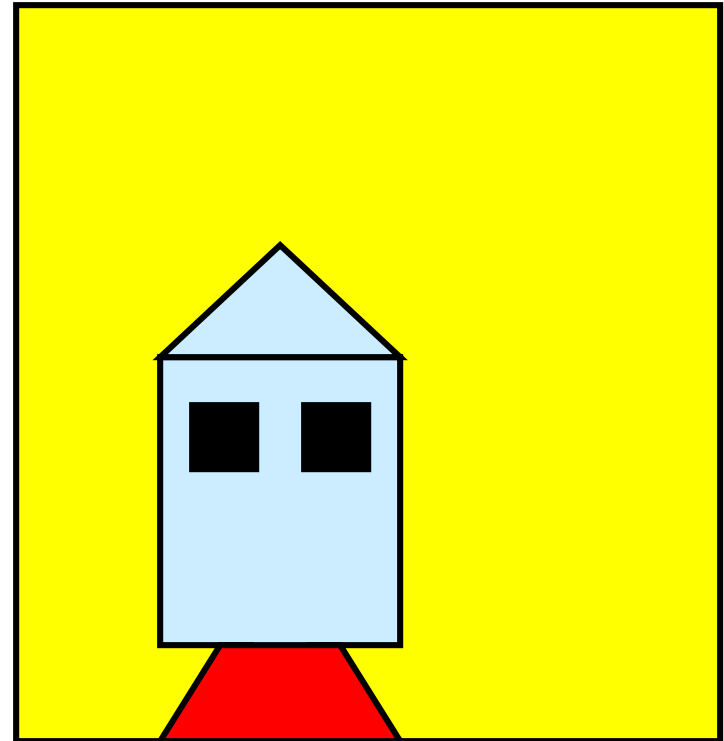
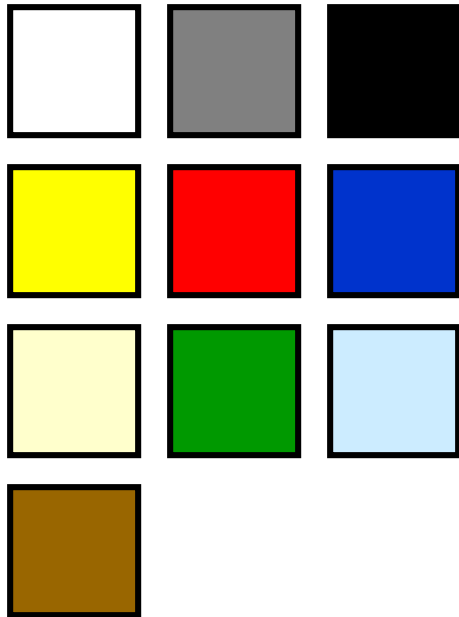
# Gate Array

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# Gate Array

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# FPGA Design

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



# FPGA

