3D, UHD and Scalable TV Challenges and Perspectives

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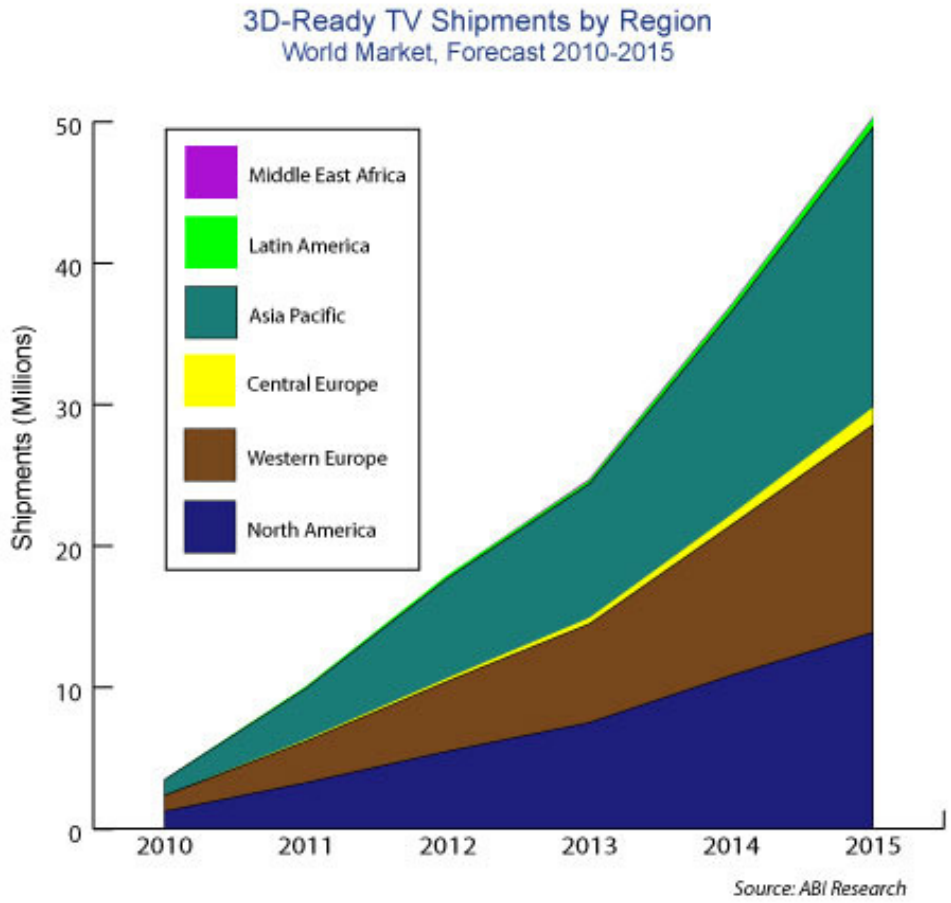
3D TV Market



- 3D TV sets will approach 50 million in 2015
- The popularity of 3D movies

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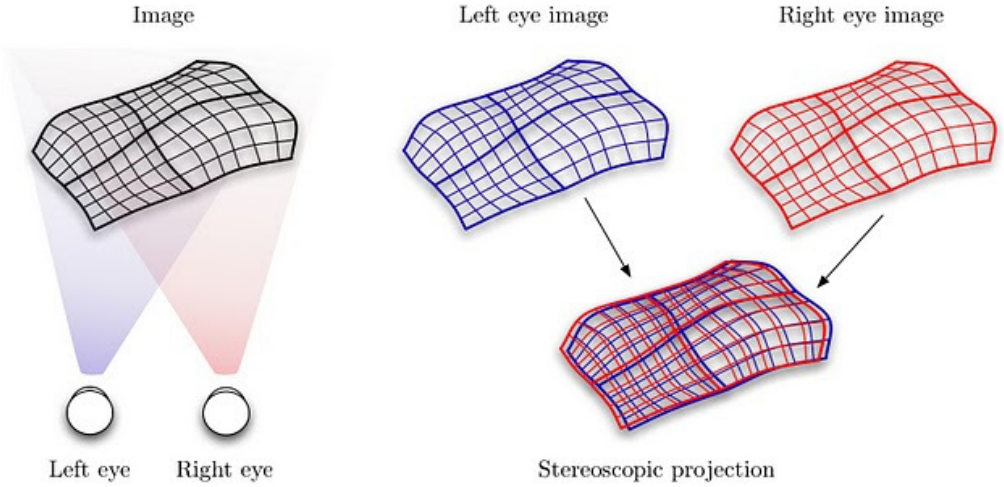
3-D Imaging Methods

- Depth Sensing Techniques
  - Display 3-D provide images which can stimulate the depth sense
- Display 3-D can be classified as
  - Binocular
  - Multiview
  - Integral Imaging
  - Holography

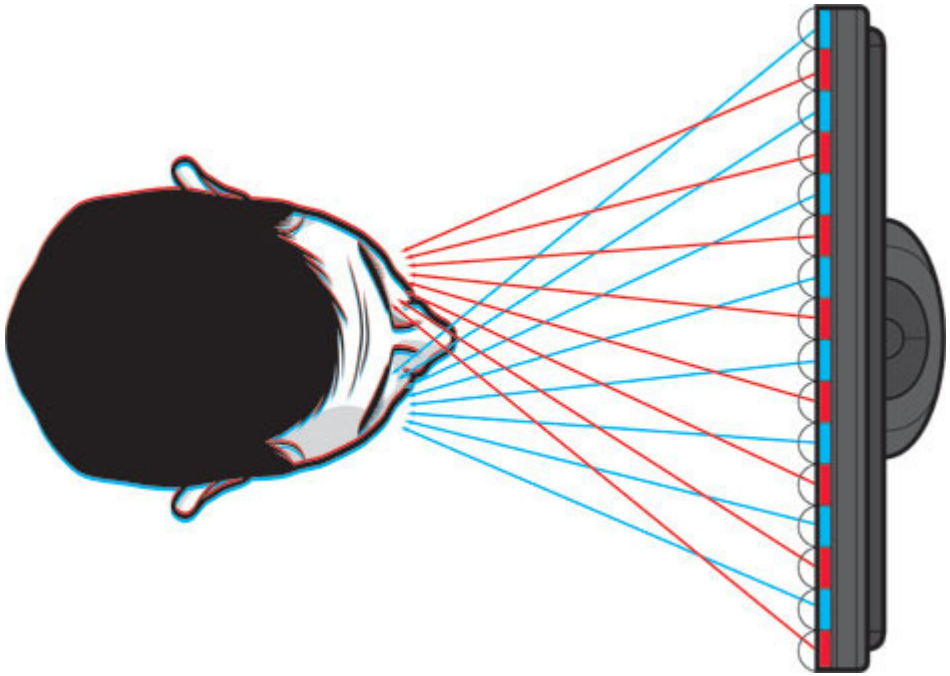
Display 3D

- Binocular
  - Principle of stereoscopy
  - Two images, one for each eye.
  - Glasses or headsets
    - Anaglyph, Polarized glasses, …



Display 3D

- Autostereoscopic
  - 3D without glasses
  - Two-view displays
  - Head-tracked displays
  - Multiview displays



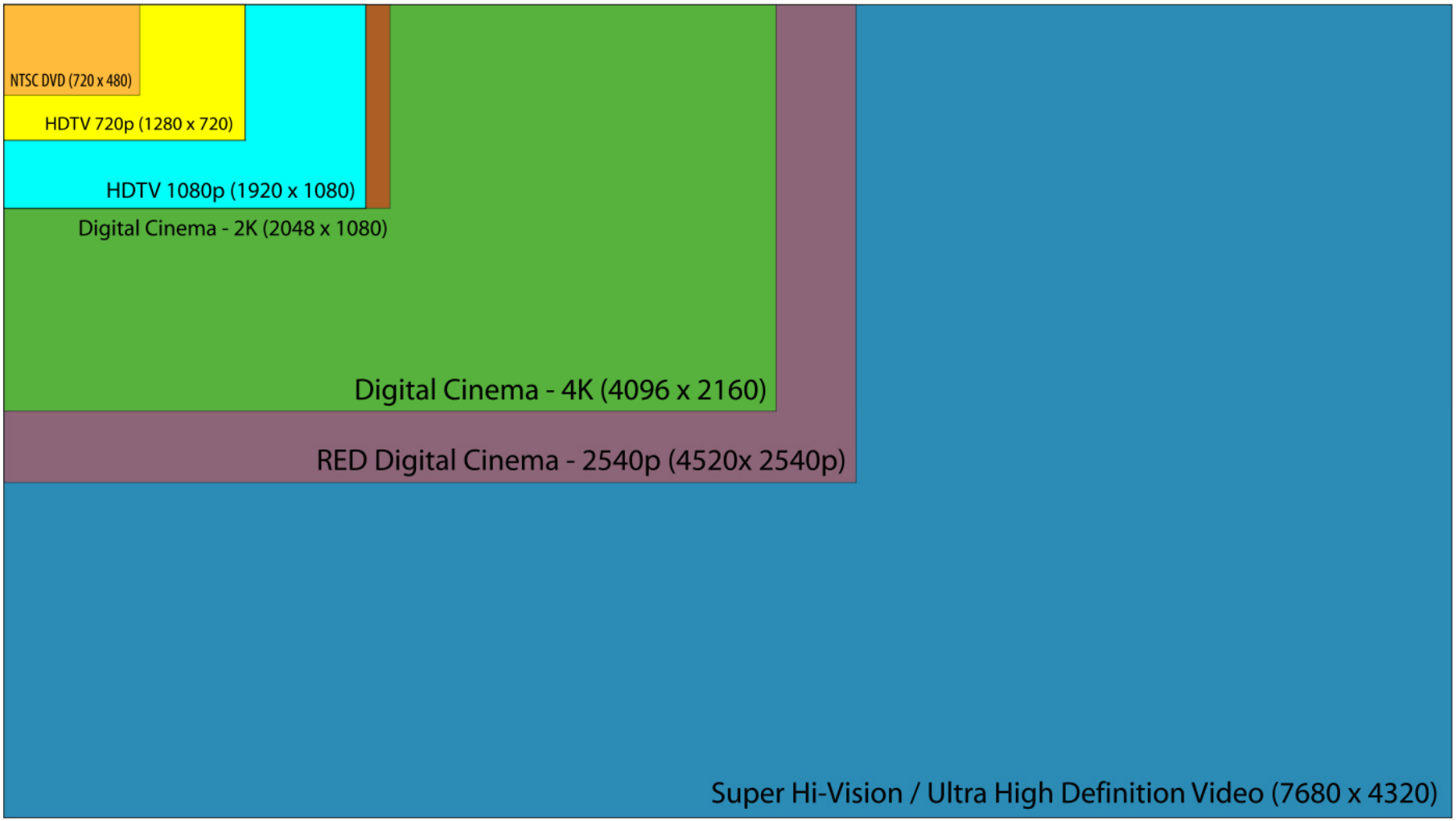
Display 3D

- Integral Imaging (Integral Photography)
  - 3D without glasses
  - Record in a 2D matrix sensor many elemental images of a 3D scene
    - elemental image stores the information of a different perspective of the object
- Holography

Ultra High Definition Video- UHD

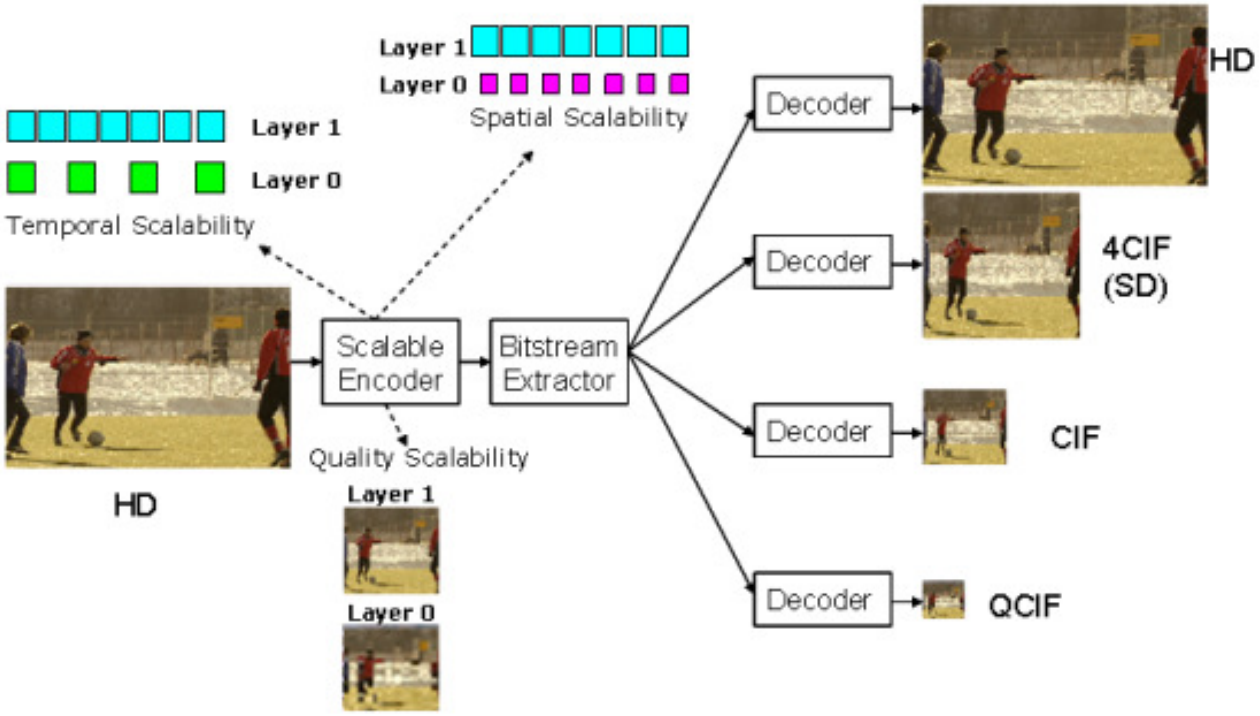
- 7680x4320 pixels
- 60 Fps
- 16 bits/pixel
- Based on the Shannon Capacity, we cannot transmit signals at a rate exceeding 59Mbps per TV channel (6MHz) with a signal to noise ratio (SNR) of less than 30dB.

Ultra High Definition Video- UHD



Scalable Video

- Solution for diverse devices
  - HD and UHD
  - 2D and 3D



Challenges for Broadcasting

- 3D and UHD TV requires
  - Wide band transmission
    - New compression techniques
    - New transmission techniques
      - Adaptive modulation
      - Smart antennas
      - Space time code
  - Standard for multiplexing

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