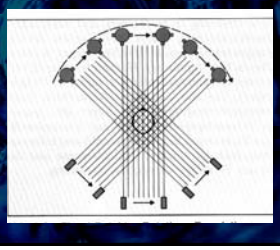
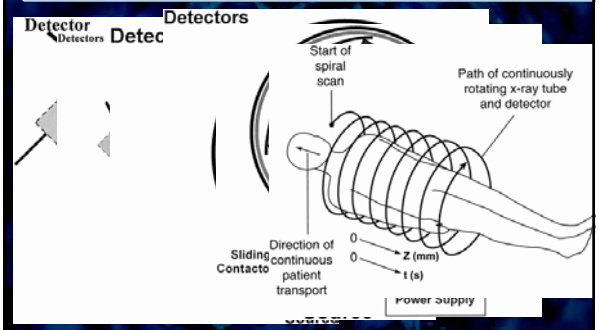
How CT / MSCT works

☑ Imageaquisition:

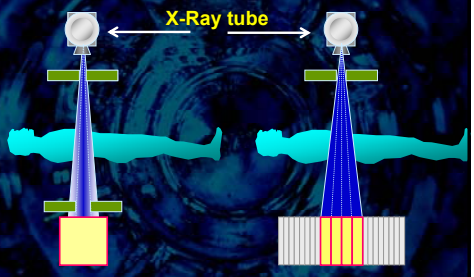


How CT / MSCT works

Gerätetechnik: Generationen

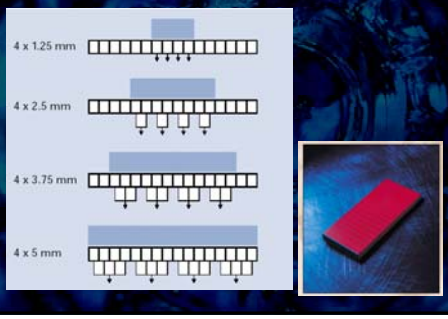


Single vs Multirow



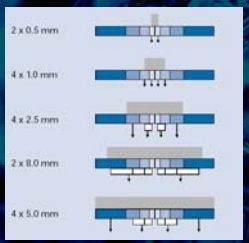
Multirow Detector CT:

☑ Fixed Matrix Detektor



Multirow detector CT:

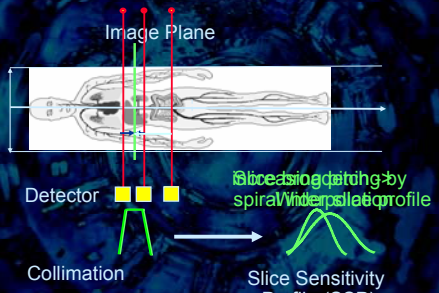
☑ Adaptive Array Detector



Multirow detector CT:

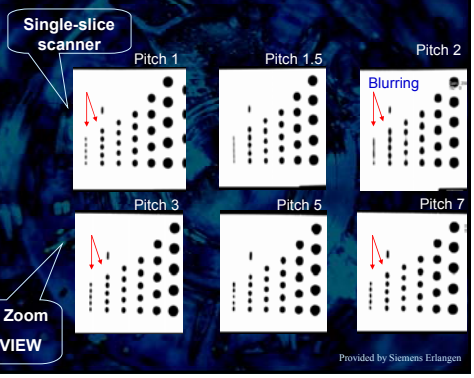
☑ Adaptive Array Detector

Single Detector CT



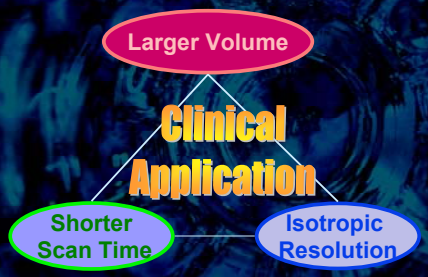
Provided by Siemens Erlangen

Single vs Multirow



Provided by Siemens Erlangen

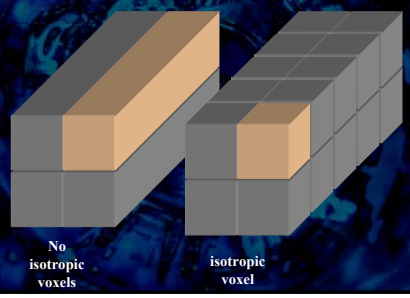
„Magic Triangle"



Provided by Siemens Erlangen

Resolution

☑ Isotropic Imaging



Speed

☑ 64 slices /rotation
☑ Rotation times < 0.5s possible
➔ Dynamic studies

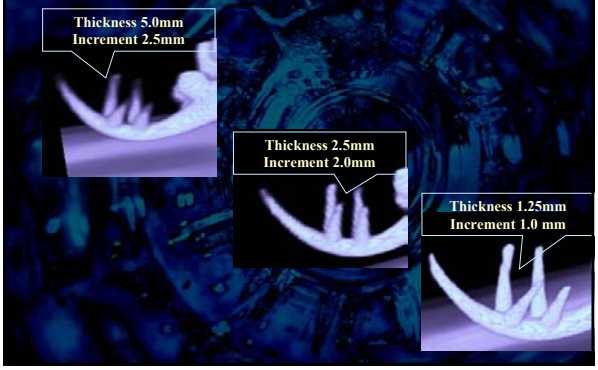
CT -- Benchmarking

- ☑ **Geometric Resolution:**
  - xy: 0.3-0.5mm
  - z: 0.6mm
- ☑ **Radiometric Resolution:**
  - 12bit data = 4096 shades of gray
  - Hounsefield Units (HU):
    - Minimum: -1024 HU = air
    - Zeropoint: 0 HU = water
    - Fat: -120 – 80 HU
    - Bones: > 200 HU

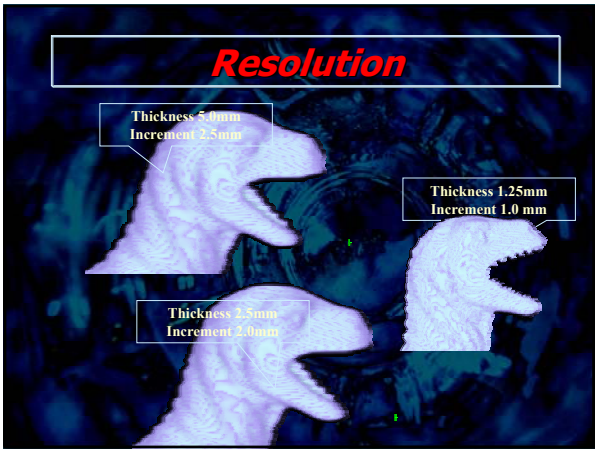
CT -- Benchmarking

- ☑ **Time Resolution:**
  - Standard: 0.5s
  - Cardiac Mode: 0.33s
- ☑ **Maximal Scanlength:**
  - ca. 150cm

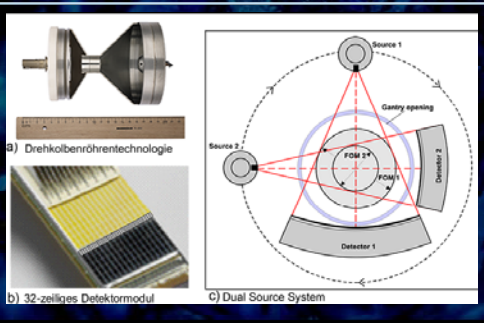
Resolution



Resolution



CT – New: Dual Source CT



CT & Radiaten

- ☑ **CT ~ 10% of Xray Examinations**
- ☑ **CT → source of ~50% medical related radiation**
- ☑ **Incresases stochastic risk for cancer development:**
  - 1mSv Totalbody irradation → risk for lethal cancer is increased by 5%
  - USA: maybe about 500 children dying a year by cancer due to CT