E-beam - X-ray :

The Path Ahead

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International Atomic Energy Agency Scientific Forum

ATOMS IN INDUSTRY

Radiation Technology for Development

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E-beam & X-ray Applications

Mature applications

- E-beam Medical Devices Sterilization (In-line, In-house, Service centers)
- Polymer cross linking (wires, tires, heat shrink, pipes)

Side applications

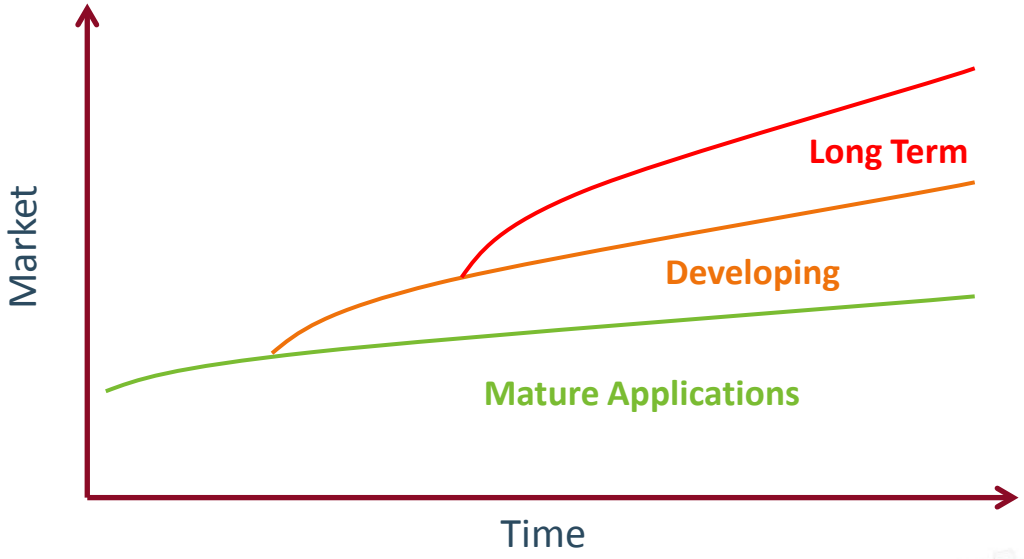
- Mail sanitization
- Gemstones
- Sterile Insect Technique (SIT)
- Semi-conductors

Developing applications

- X-ray Sterilization
- X-rays for Cargo screening
- Mo-99 production

Future applications

- Food irradiation
- Environment (Waste/Water Treatment/Flue gas…)

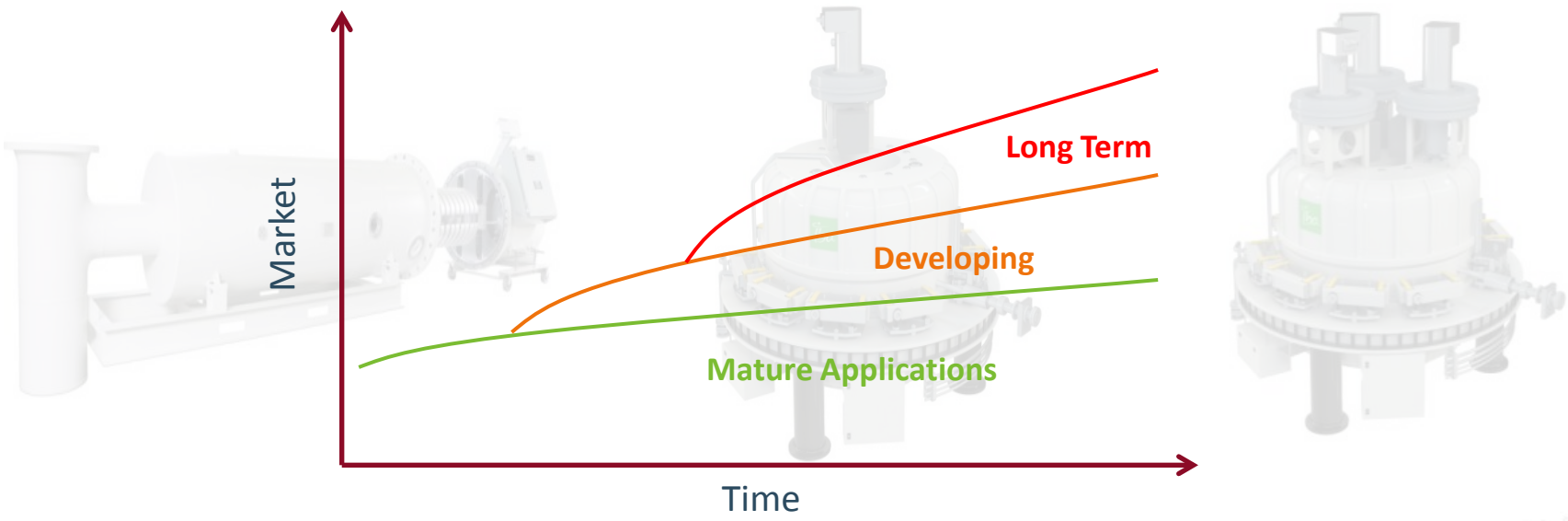


Product Portfolio

Dynamitron
0.5 -> 5 MeV
Up to 160 mA
Electron beam

Rhodotron
3 -> 10 MeV
0 -> 245 kW
Electron beam

eXelis
5 or 7 MeV
0 -> 560kW
X-rays



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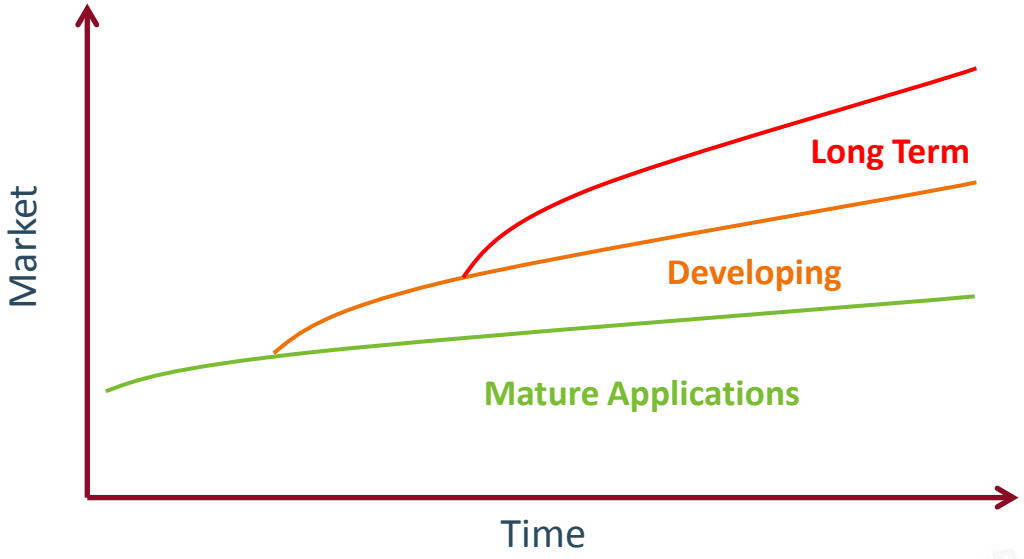


Sterilization Methods

Thermal

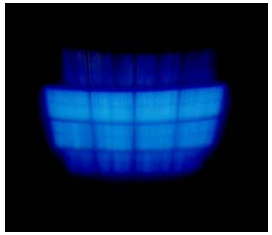
Chemical

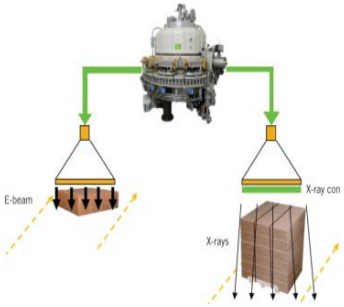
Radiation

Steam - Autoclave

Ethylene Oxyde

- g • Gamma
- b • E-beam
- X • X-ray

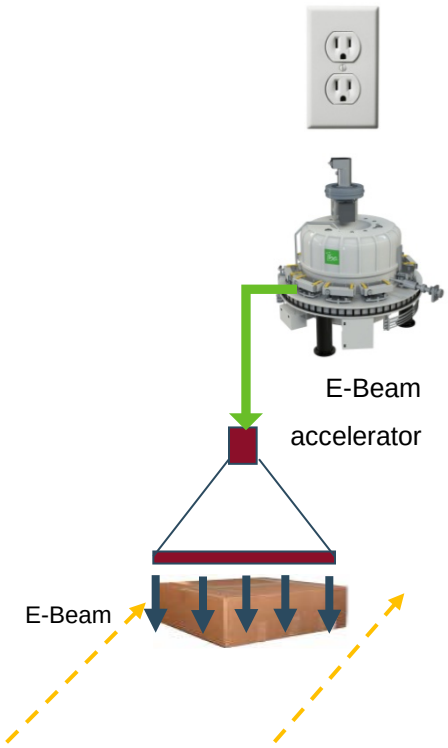




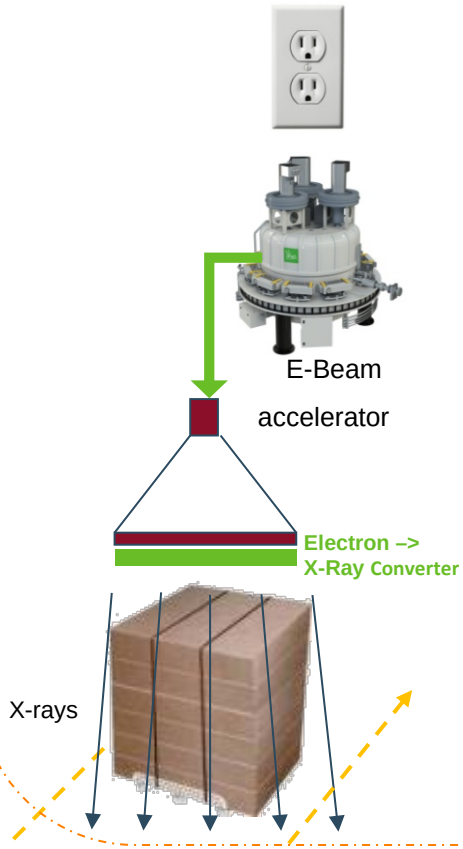
Radiation-based Methods

Same technologies from a radiation point of view

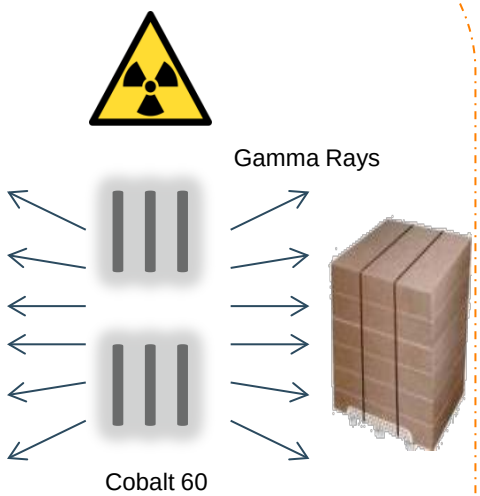
E-beam



X-ray



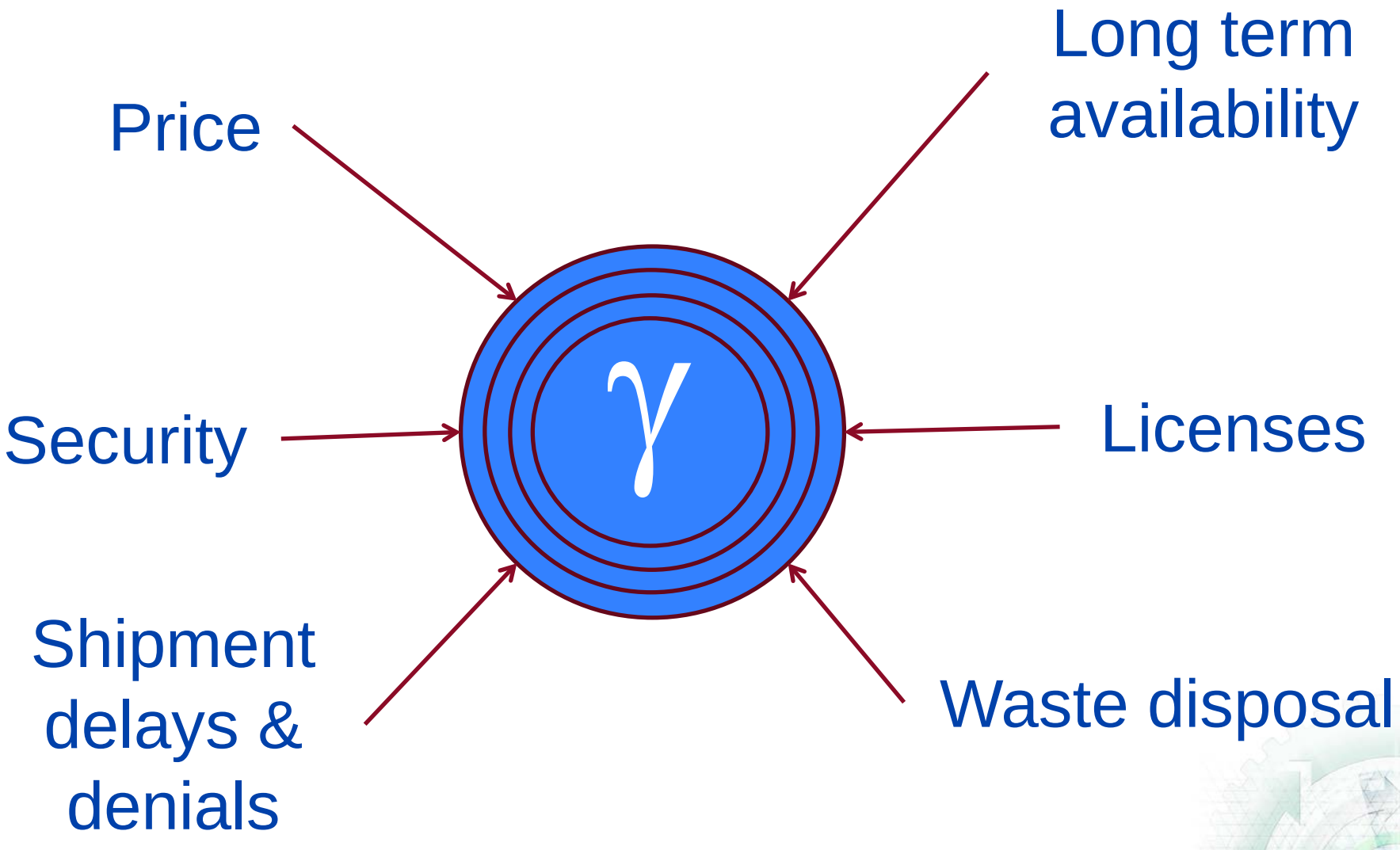
Gamma



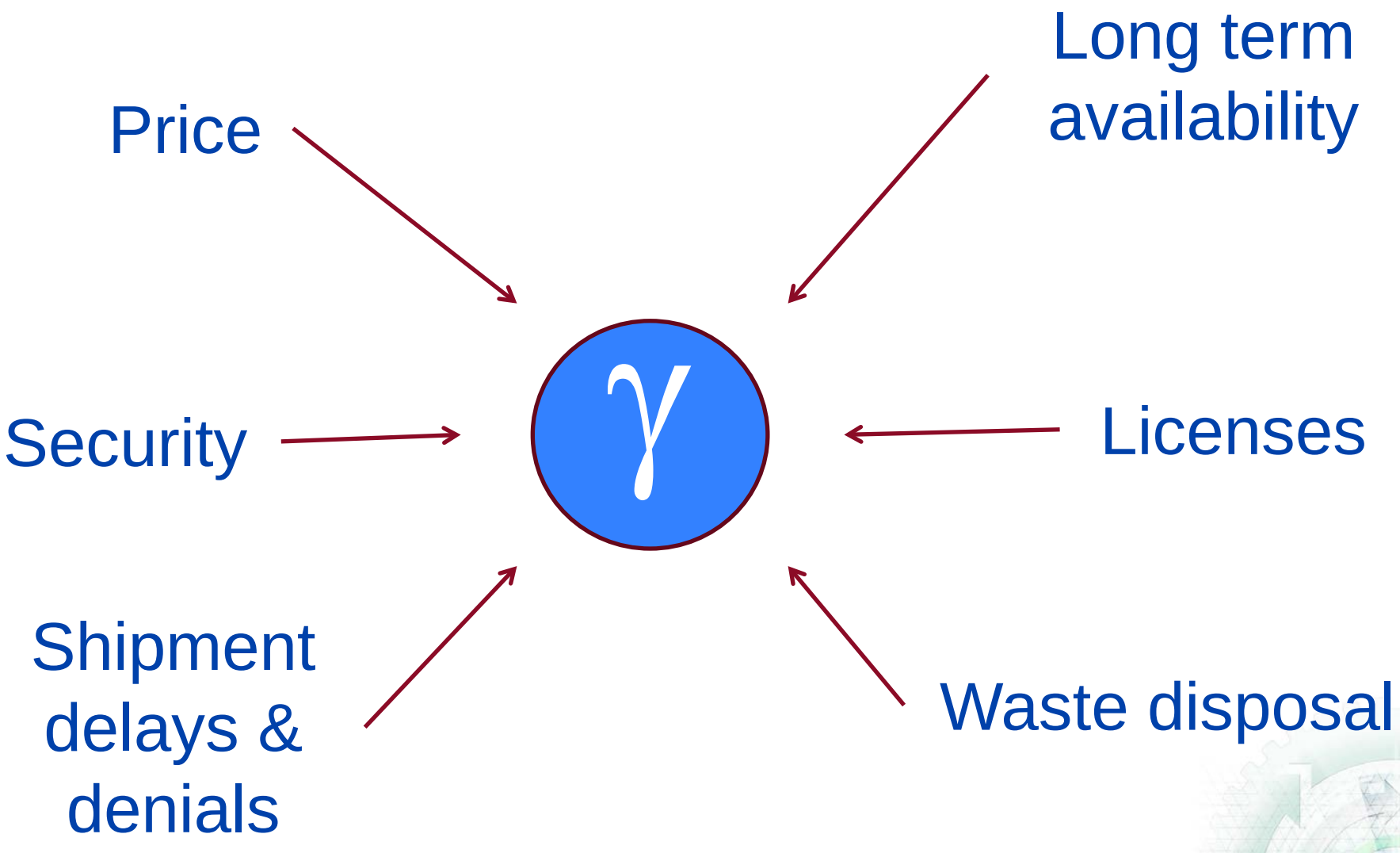
Key Differences

- Source: electricity vs Cobalt-60
- Directional vs Isotropic
- On/off vs continuous irradiation

γ Threats


Price
Long term availability
Security
γ
Licenses
Shipment delays & denials
Waste disposal

γ Threats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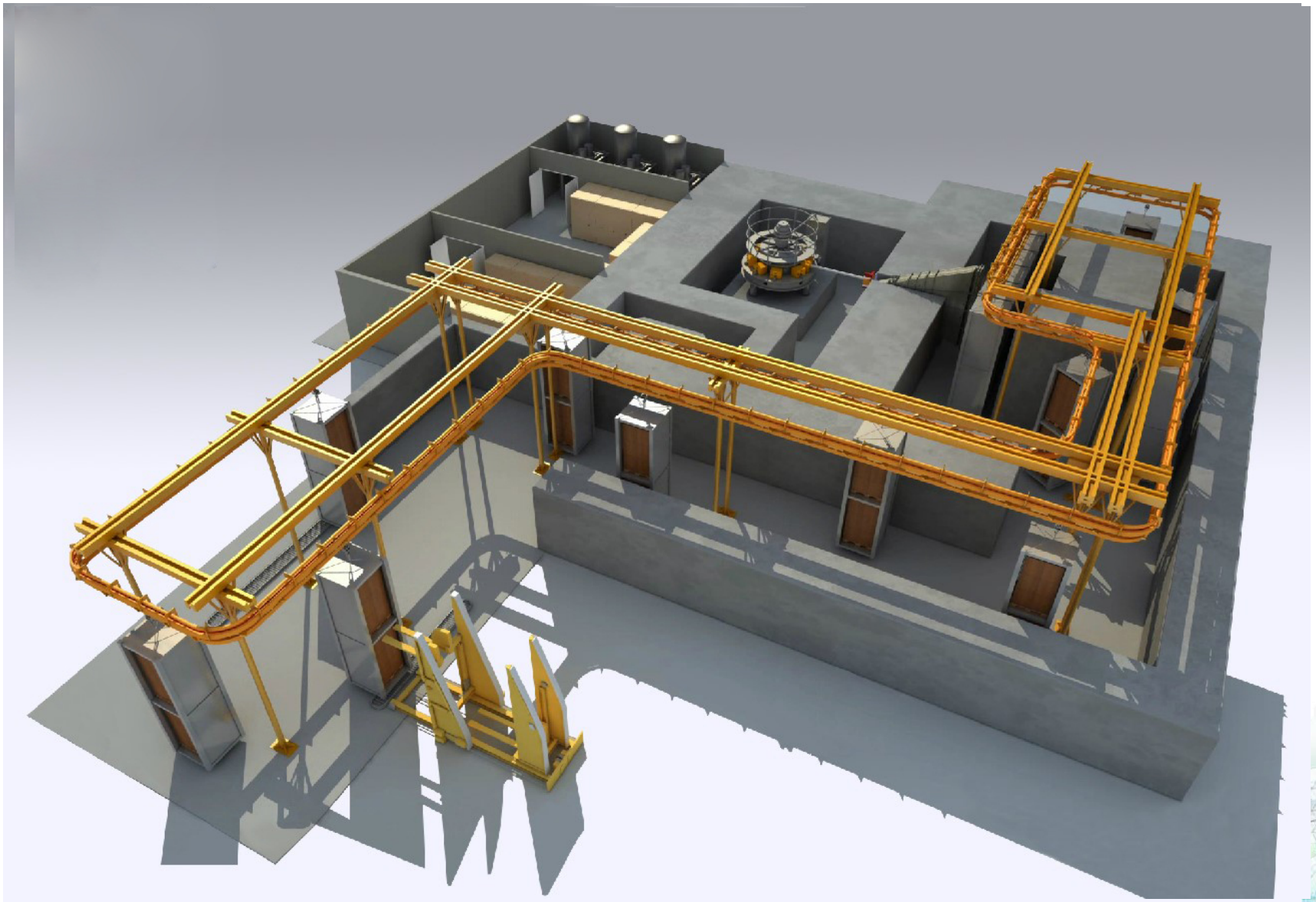
X-ray : THE Alternative



X-ray : THE Alternative

- Electrically powered – No radioactive source
- Treatment equivalence - Photons
- Better treatment quality
- Cost effective

Vision for Future

- Stay open to **emerging applications**
- Evolve and benefit from **technology breakthrough**
- Anticipate **threats** and **opportunities** using **sustainable solutions**

Thank you!

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