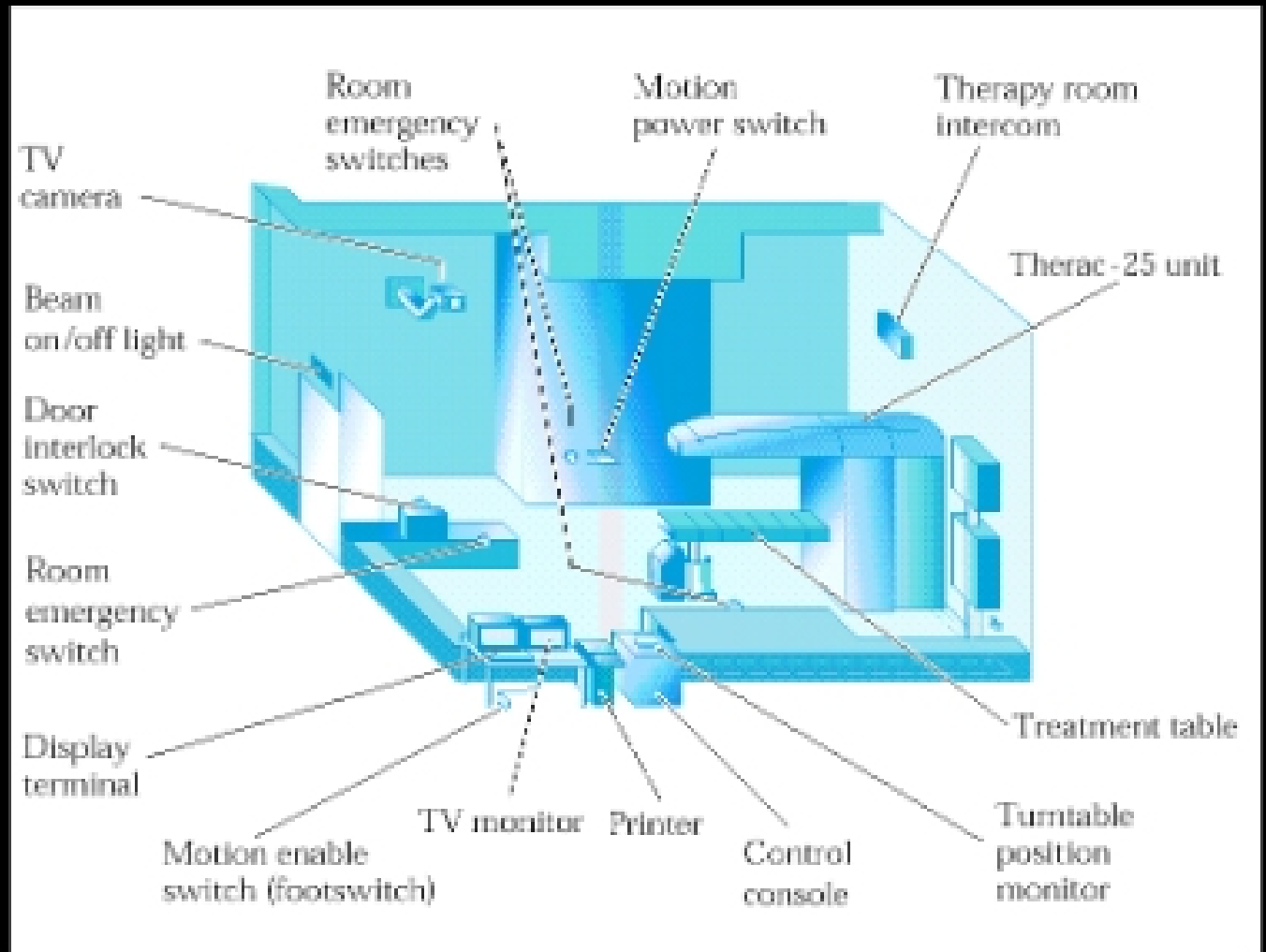


Therac-25

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Keep the socio-technical system in mind



Patient

The Machine

- Video, audio, etc.
- Hardware
- Software Systems

Hospitals and Clinics

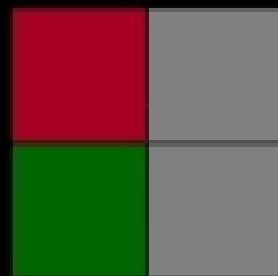
- Doctors, Medical Physicists
- Management, User groups
- Operators, Reporting

Atomic Energy of Canada Limited

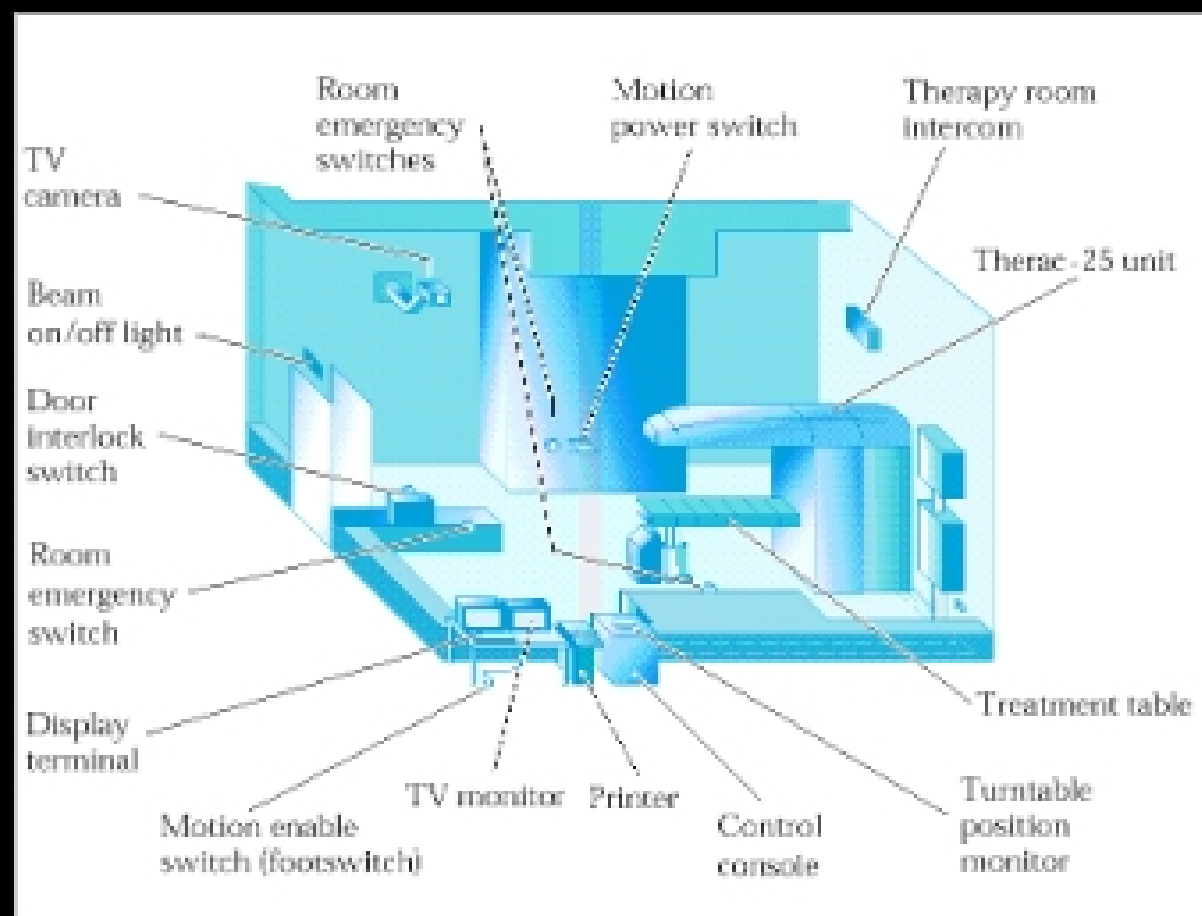
- Management, Reporting
- Design teams, sales staff, support and field engineers

Gov't Medical Device Regulation

- FDA
- Canadian Radiation Protection Bureau
- Reporting procedures



The Therac-25 was created in the mid-1970s



- AECL reused code from the Therac-6 and Therac-20
- Hardware safety checks replaced by software
- Dual mode (X-ray and proton)
- PDP-11 controls the turntable
- Tested in 1983
 - Assumed no design errors in software
 - Considered software failures like "computer selects wrong mode" but assigned them probabilities of 4×10^{-9} .