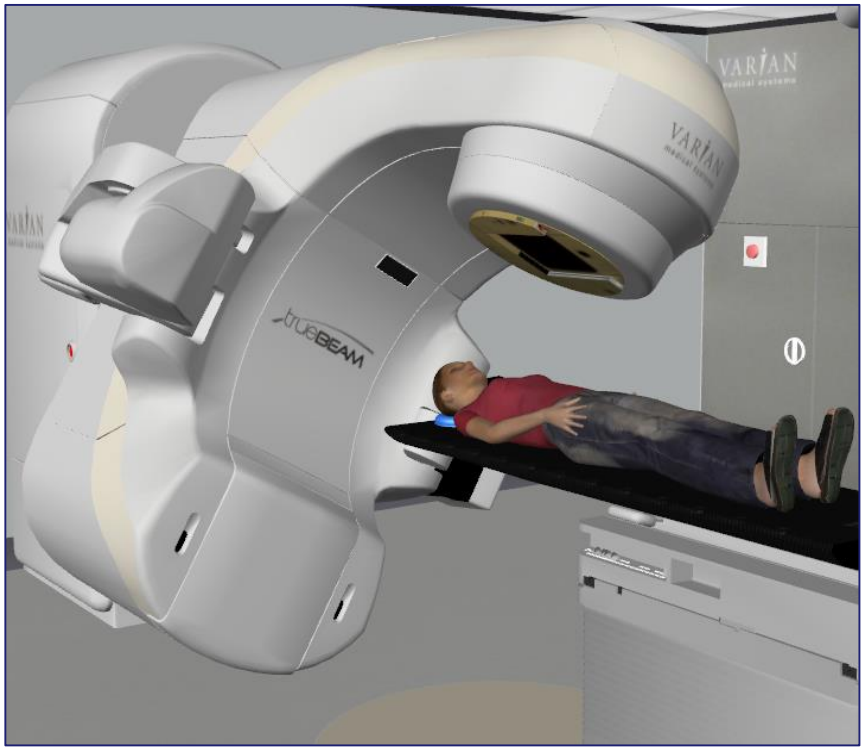
Introduction to VERT

The Origins of VERT

- Research began in 2001 to create a Training Simulator for Radiotherapy
- Collaboration between the University and the NHS
  - Department of Computer Science, University of Hull
  - Hull and East Yorkshire NHS Trust
- Vertual Ltd. founded in 2007

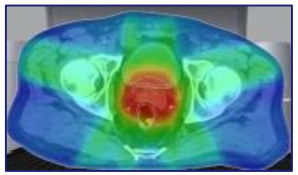


Vertual Ltd

Vertual Ltd

- Based in Hull since 2007
- Local Employer
- Software Development Business
- Hardware R&D
- Sales & Support
- UK Manufacturing
- International Distribution
- ISO 9001 Quality Certification

BSI
UKAS QUALITY MANAGEMENT 003
ISO 9001:2008
FM 563615

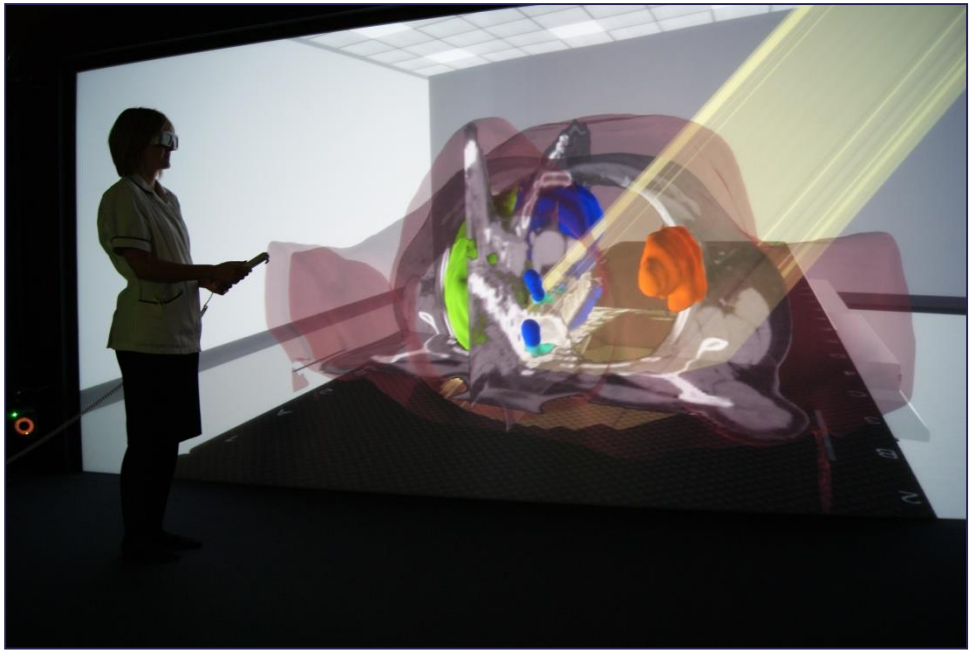


What is VERT?

The Flight Simulator for Radiotherapy

A Virtual Linac

- A fully interactive, life size visualisation of a radiotherapy treatment room
- Authentic controls are used to operate the virtual Linac
- Deliver beams, visualise structures and dose
- Safe environment for training



Why do you need VERT?

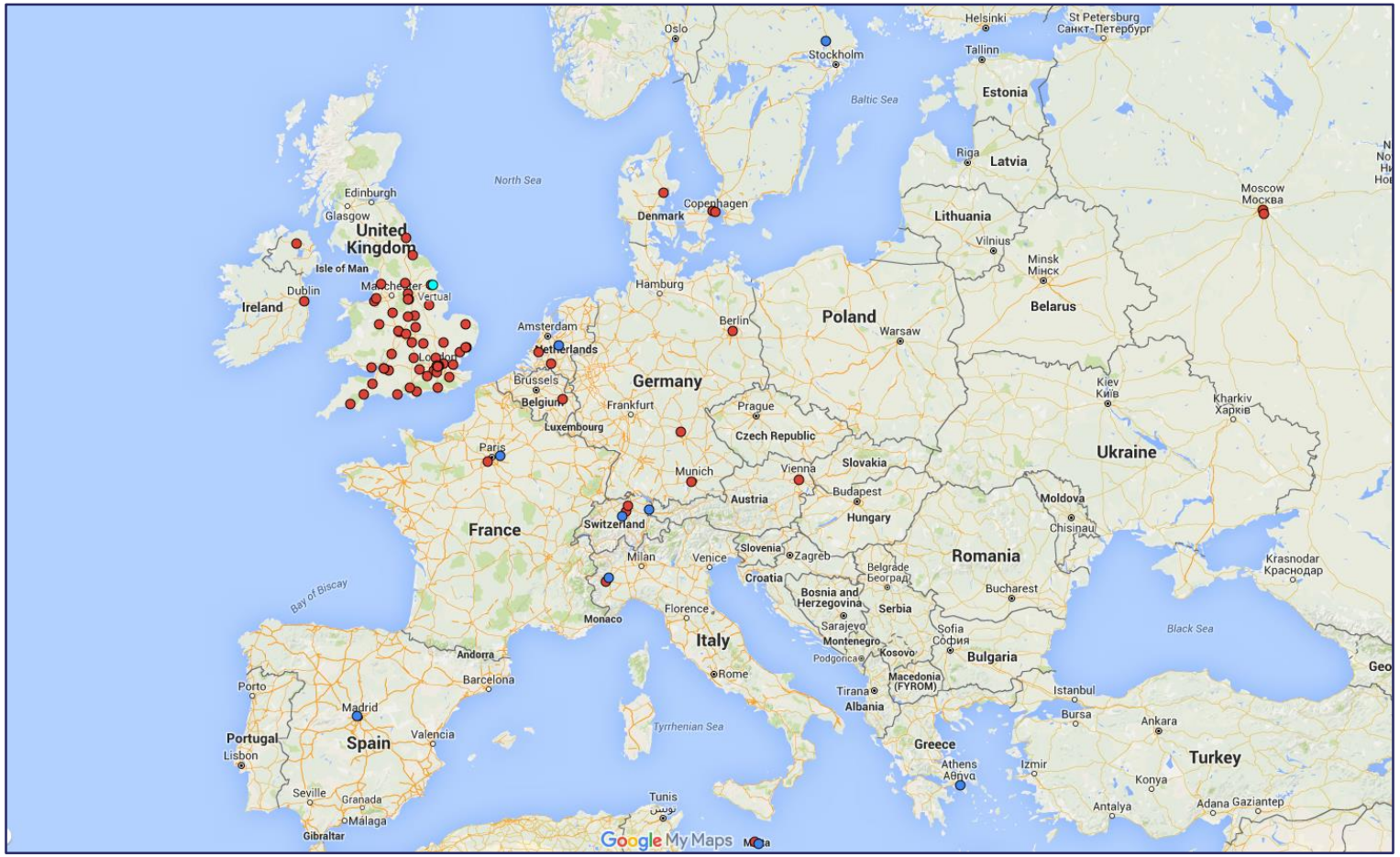
- Train student therapists
- Inter-professional learning
- Enhanced visualisation for developmental learning
- Additional training resource for visitors and local staff
- Technique development and review
- Test technical competence during admissions
- Outreach programmes and Increase admissions and public awareness

The Impact of VERT

Global Installations
112 Systems in 21 Countries

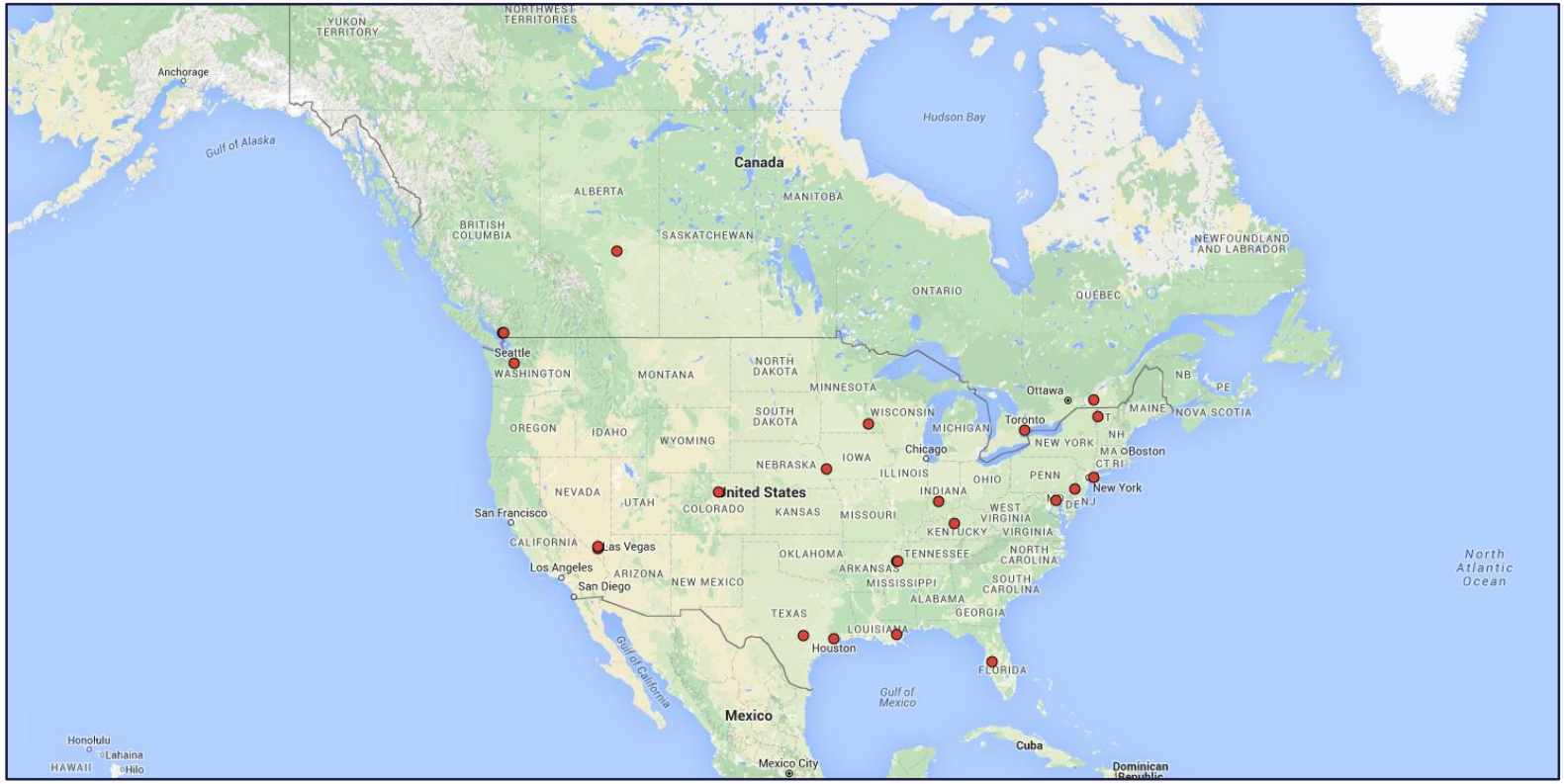
- England
- Denmark
- Ireland
- Wales
- Holland
- Canada
- United States
- India
- Switzerland
- Russia
- Australia
- Italy
- New Zealand
- France
- South Africa
- Germany
- Hong Kong
- Israel
- Malta
- Northern Ireland
- Belgium

European Installations
66 Systems in 13 Countries



- England
- Denmark
- Ireland
- Wales
- Holland
- Switzerland
- Russia
- Italy
- France
- Germany
- Malta
- Northern Ireland
- Belgium

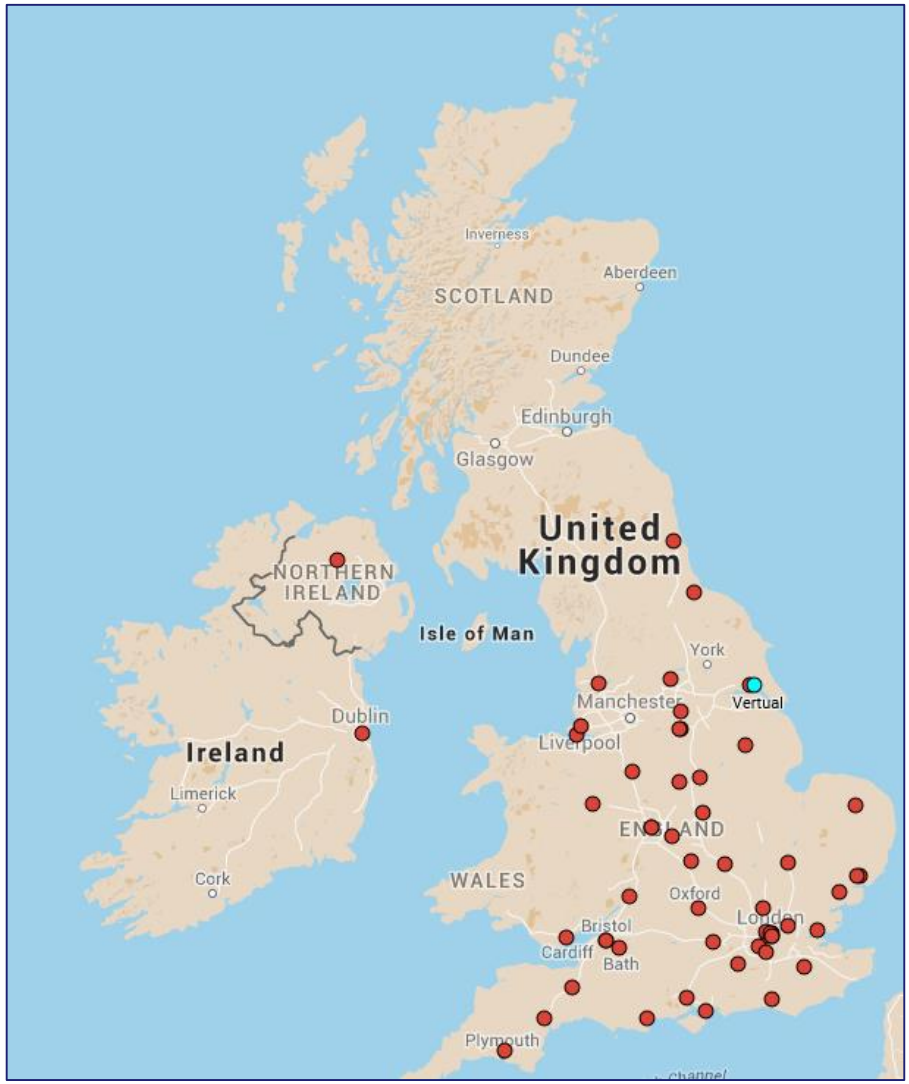
Northern America Installations
22 Systems in 19 States



- Toronto
- Vancouver
- Burnaby
- Westmount
- Edmonton
- Bellevue, WA
- Denver, CO
- Las Vegas, NV
- New Orleans, MS
- Tampa, FL
- Houston, TX
- Las Vegas, NV
- Philadelphia, PA
- Burlington, VT
- Bloomington, IN
- Memphis, TN
- Baltimore, MD
- Rochester, MN
- Garden City, NY
- San Marcos, TX
- Omaha, NE
- Lexington, KY

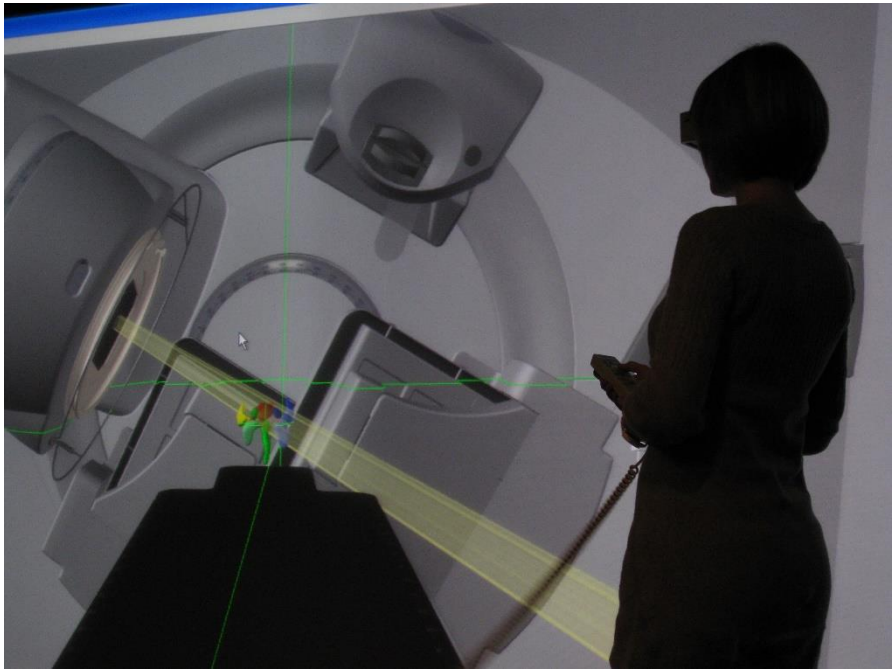
UK and Ireland Installations
51 Systems in 4 Countries

- Wales
- Northern Ireland
- Ireland
- England



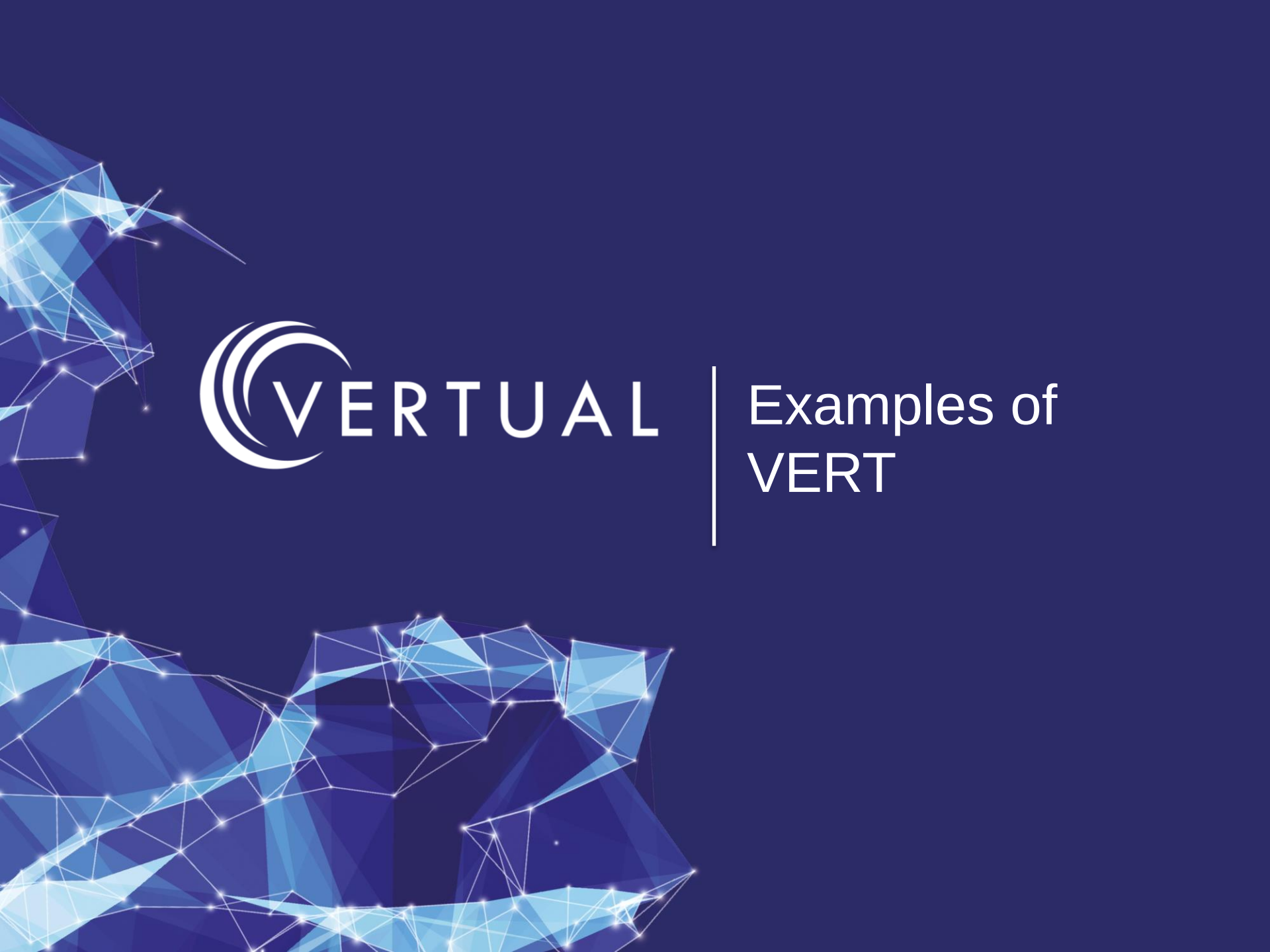
Installed Base

- 112 systems worldwide
- 21 Countries
- 16 Distributors
- First installation 2007



Installation breakdown by type

Immersive VERT Business	**5**
Immersive VERT Cinema	**32**
Seminar VERT Business	**58**
Seminar VERT Cinema	**3**
Portable VERT	**11**
Recruitment VERT	**2**
2D VERT	**1**
Total Systems (May 2015)	**112**

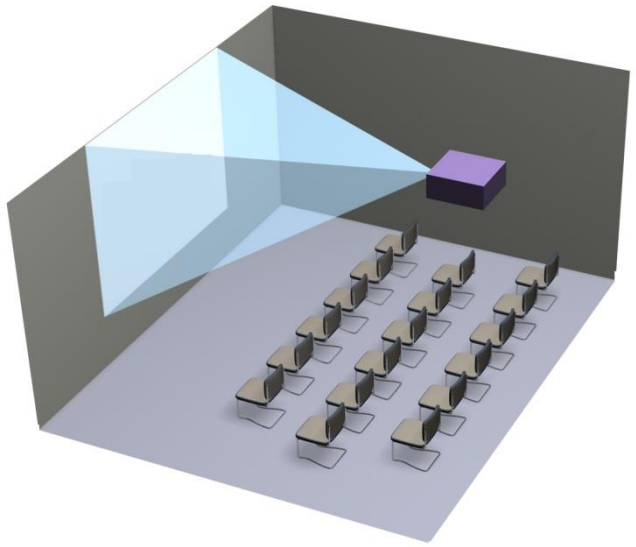


Examples of VERT

Seminar VERT

A cost effective compact VERT solution

- Installed in seminar and large meeting rooms
- Dedicated room not required but desirable
- No significant refurbishment required
- Possible to upgrade later to Immersive VERT



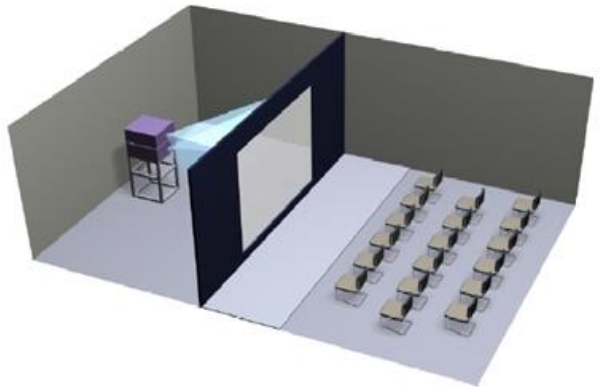
Forward 3D projection

Projector, PC, screen, cinema glasses, hand pendants supplied as part of the system.

Immersive VERT

A state of the art VERT solution

- Installed in an auditorium or large classroom environment
- Aperture wall construction and some refurbishment required.
- Staged area for interaction within virtual treatment room
- Dual or single 3D projection
- Tracking system optional



Rear projection 3D system

Projectors, screen, PC, control panel, in room monitor, 3D professional glasses supplied as part of the system.

VERTUAL
Immersive VERT

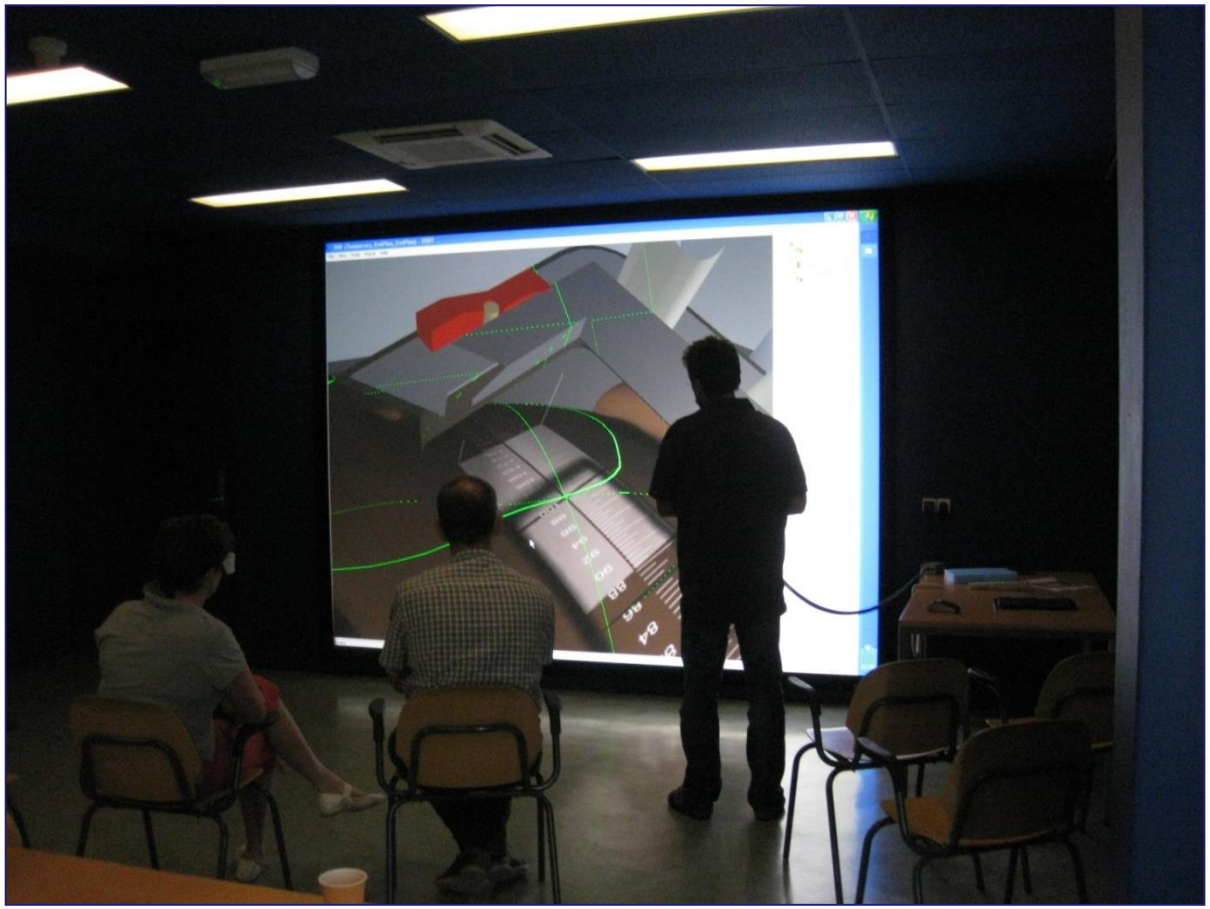
Erasmus Medical Centre

Room prepared for VERT Installation as per room preparation guidelines

Erasmus Medical Centre

Projector room, post system installation - Cinema grade projector

Erasmus Medical Centre



In the VERT Room. The team getting some “Hands on” as part of the system training

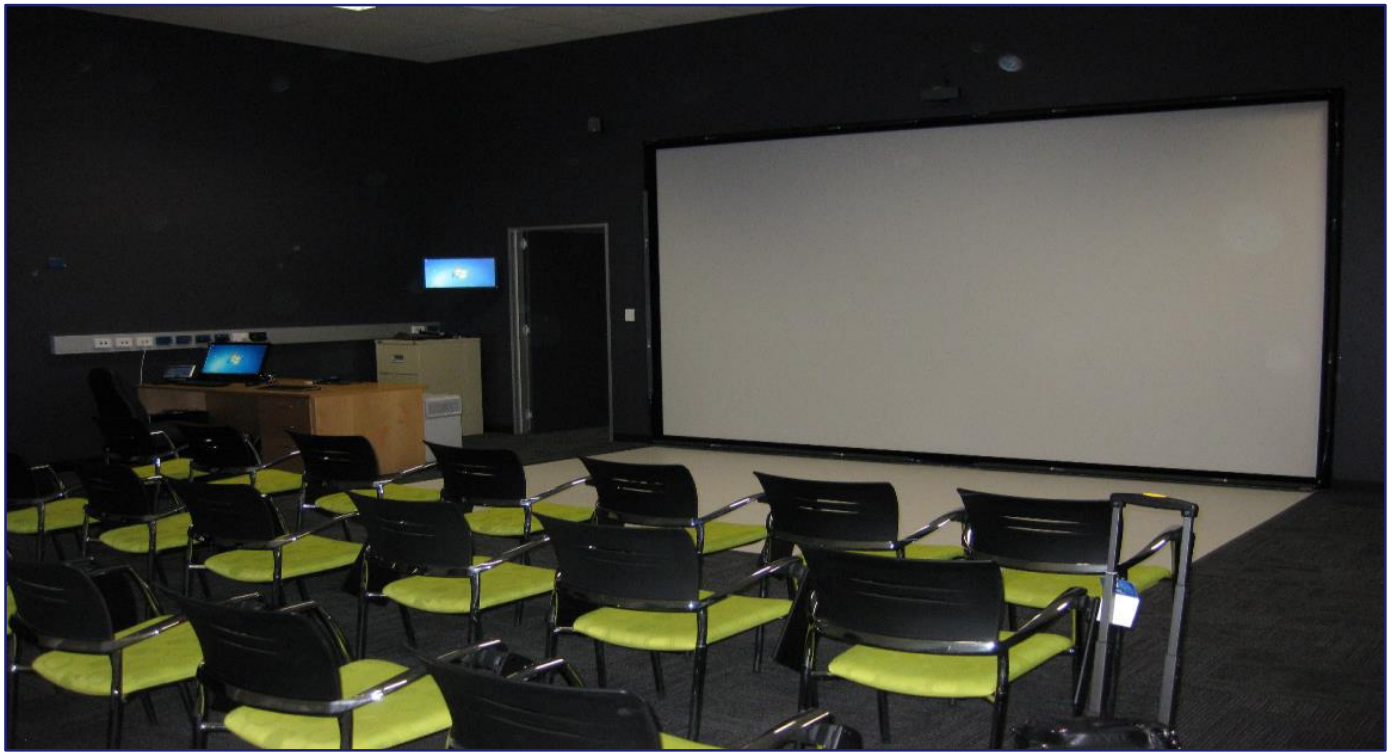
University of Otago

University of Otago, Wellington, New Zealand

Seminar System – installed January 2013

University of South Australia

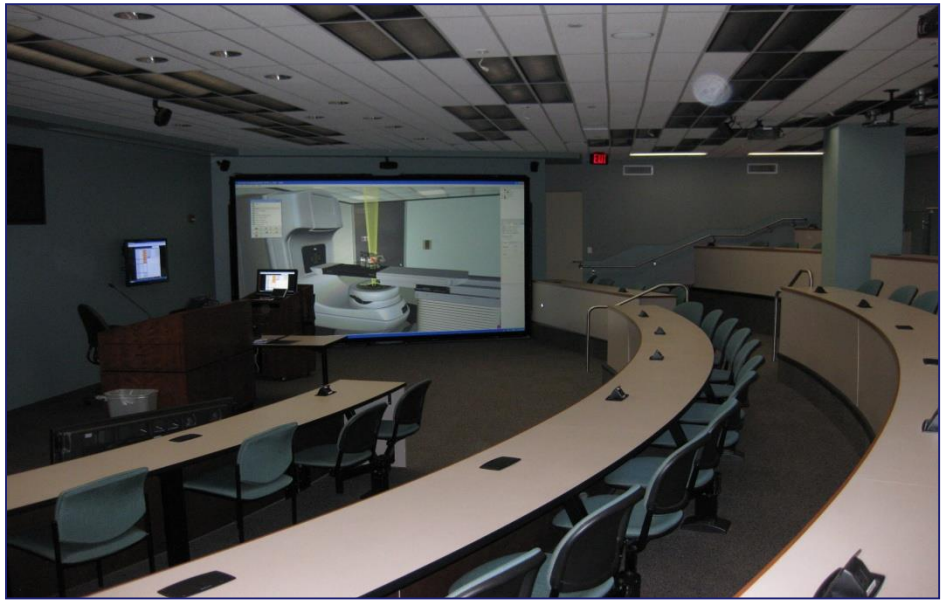
University of South Australia, Adelaide, Australia



Seminar System – installed December 2011

Immersive VERT
MD Anderson Cancer Centre

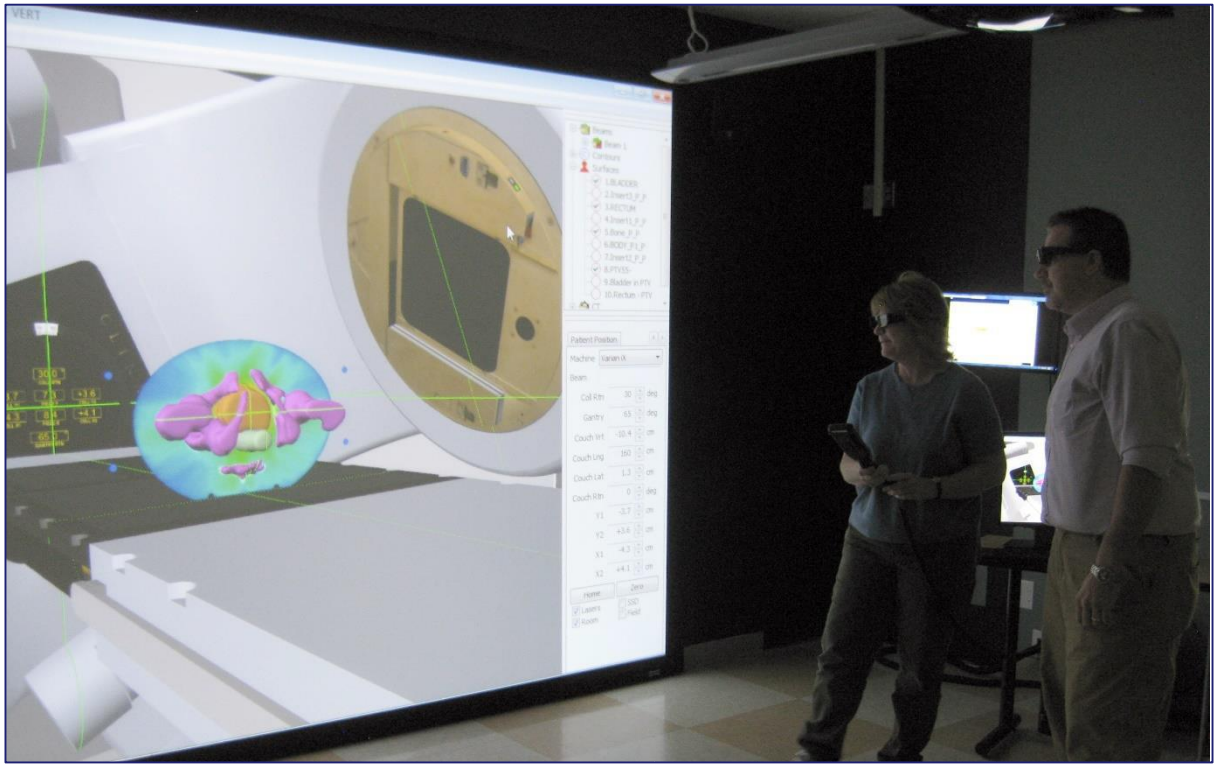
Routinely Ranked the World's No. 1 Cancer Centre



State of the art system
Immersive VERT system with tracking that gives users a holographic experience.
System went live in September 2010.

VERTUAL
Seminar VERT

St. Catharine's Community College, Kentucky, USA



Seminar System – installed August 2013

Eindhoven, The Netherlands

Fonty's Paramedic Highschool Eindhoven, The Netherlands

Seminar System – installed August 2014

University of Vermont

University of Vermont, Vermont, USA

Seminar System – installed November 2012

Community College Denver

3D business grade projector and VERT system went live in August 2010

Derby University Hospital

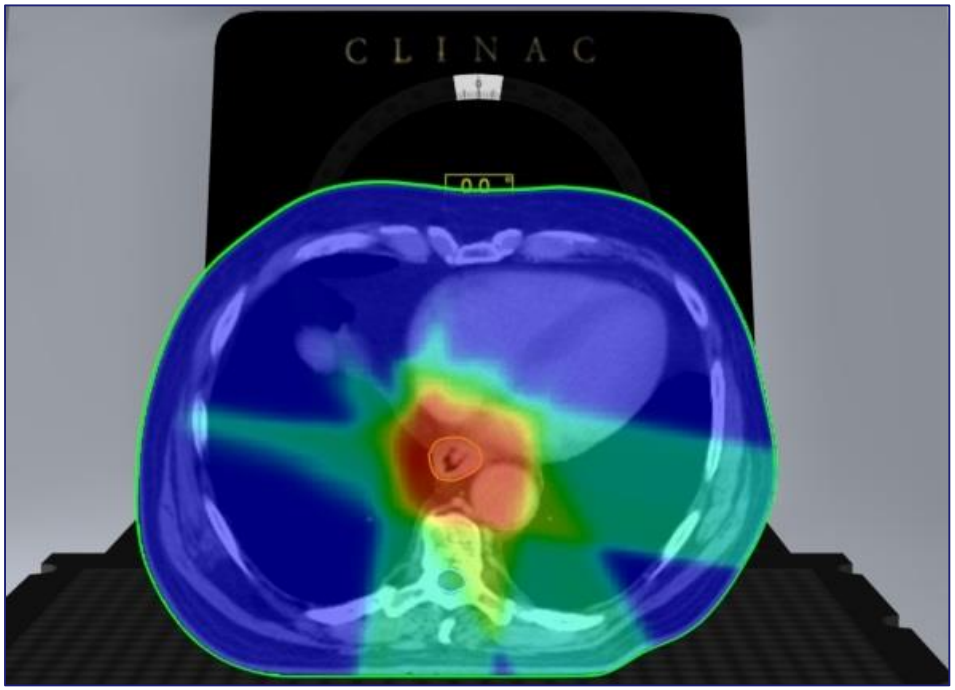
The challenge of fitting a VERT system into a hospital with few rooms available
The most compact installed Seminar system

The Benefits of Simulation

VERTUAL
The Future

The Future

- New treatment machines
- 6DOF couches
- More detailed simulation of equipment
- Proton plan import
- Improved realism
- CBCT online matching tool

The Future

- Multiple Modalities
  - CT
  - MRI
  - PET
  - Dose
- Image Fusion
- Plan Comparison
- 4D capabilities