

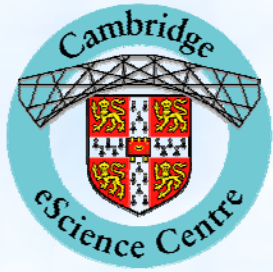
Cambridge eScience Centre

Telemedicine Project & CancerGrid

Collaborative Tools

Presented by Andy Parker

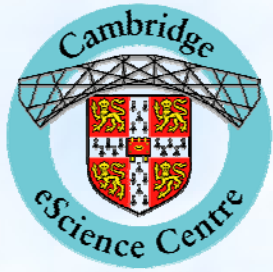




The Project

- Kate Caldwell,
Telemedicine
Developer
- Cambridge
eScience Centre
- Based at
Cambridge
University





Project Partners

- WACN
- Siemens Medical Solutions
- Macmillan Cancer Relief
- University of Cambridge Department of Radiology
- East of England Development Agency

West Anglia 
Cancer Network

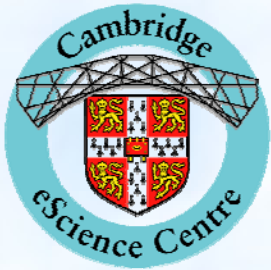
SIEMENS

Macmillan 
cancer relief

 UNIVERSITY OF
CAMBRIDGE

SCHOOL OF CLINICAL
Medicine

eastofengland 
space for ideas



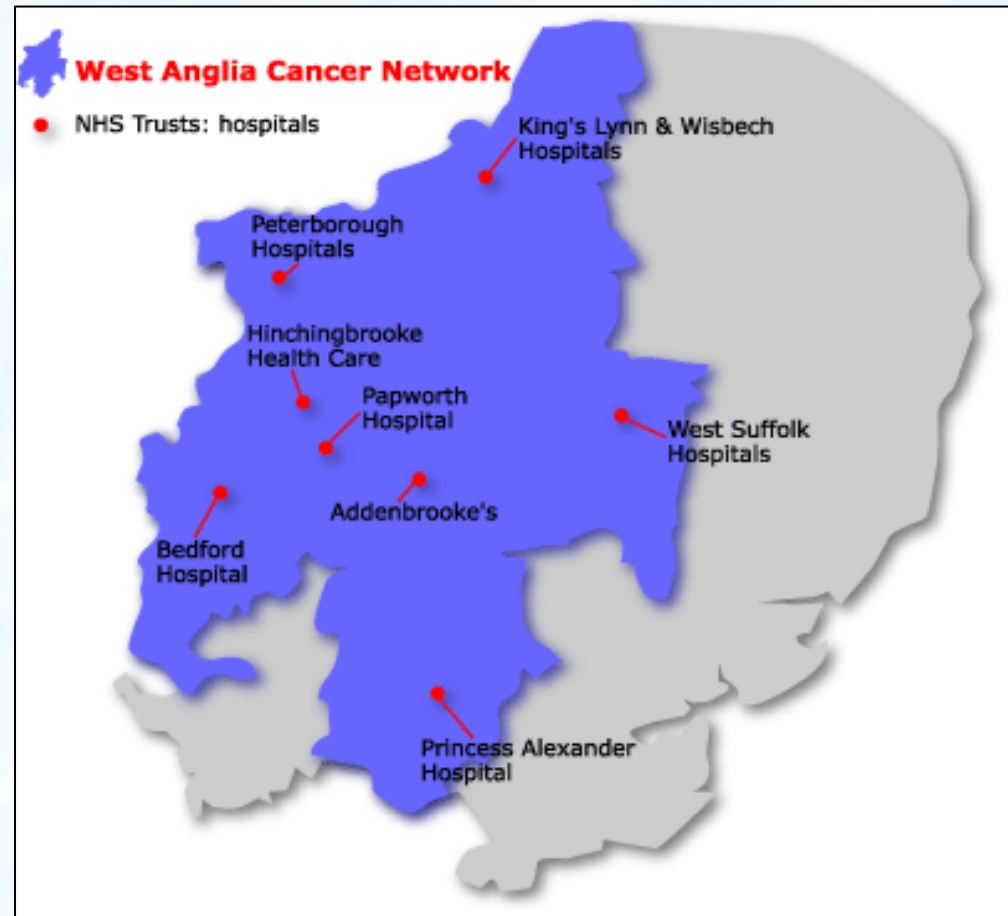
Objectives

- Deliver an integrated system
 - *Voice – full duplex audio*
 - *Video – interactive video*
 - *Data – clinical images*
- That enables electronic MDTs
- A demonstrator system that can be implemented by all cancer networks
- Videoconferencing!



The West Anglia Cancer Network

- Addenbrookes
- Papworth
- Bedford
- Hinchingsbrooke
- Kings Lynn
- Peterborough
- West Suffolk
- Harlow





Achievements

- Gynae
- Lymphoma
- Upper GI
- Dermatology
- Testis
- Urology
- Head & Neck
- Testis
- Lung





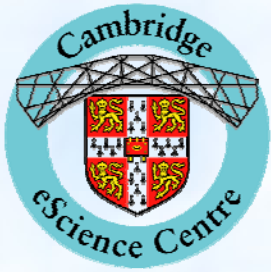
Recent Achievements

- Mount Vernon Cancer Network
 - Phase 1 – 6 sites
 - Go-Live 20th September 2004
- Thames Valley, Norfolk & Waveney, Kent & Medway, Leicestershire/Northamptonshire & Rutland, North London, Palliative Care
- Papworth Cardiology Network
 - 13 sites across East Anglia
- Fetal Medicine – 8 sites in East Anglia
- UKERNA H.323/Access Grid Interoperability Report



Why use Videoconferencing

- Cost of travel
 - Mileage costs (parking space!)
 - Clinical time
- Ensures widespread collaboration
 - Gathers as many clinical experts together as possible
 - Experience should be the same wherever they are



Electronic MDTs (eMDT)

- Clinical collaboration using videoconferencing
 - The right room
 - The right equipment
 - The right training
 - MDT Co-ordinator





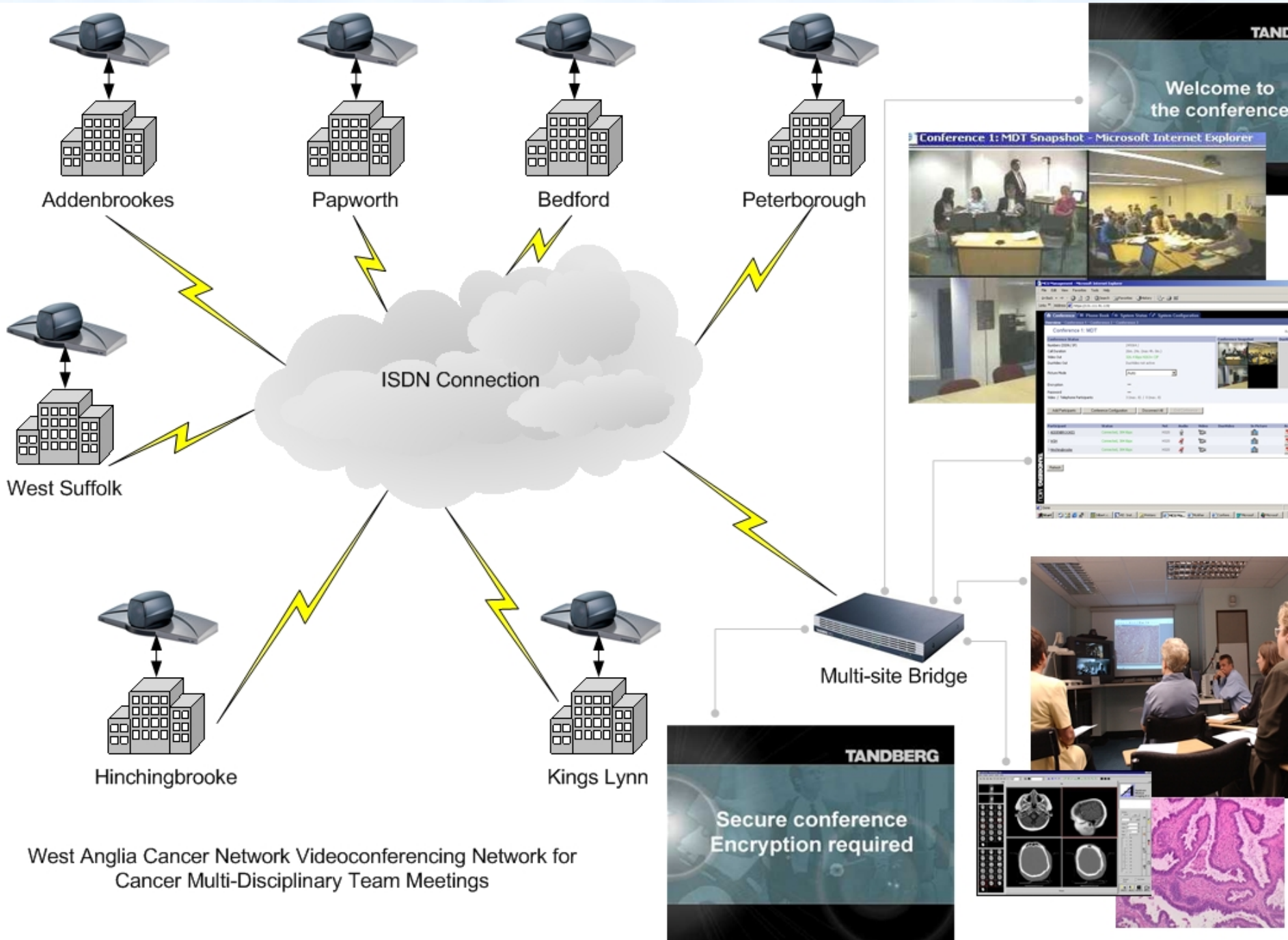
Communications Links

- ISDN
 - Integrated Services Digital Network
 - Digital Telephone Lines
 - 3 x ISDN2 or 6 x ISDN30
 - Connects at up to 384kbps
- IP
 - Internet Protocol
 - Videoconferencing on the data network
 - Connects at up to 768kbps
 - Migrating to N3, NHS IP network



The West Anglia Model

- The bridge
 - Provides a central connection point
 - Up to 16 sites in 3 simultaneous videoconferences
- The end points
 - High specification units (codec)
- The rooms
 - Equipped, accessible, dedicated for MDTs
- Easy navigation
 - Shortcut keys
 - Remote control
- Directory
 - Stores all numbers, like a mobile phone
- Conference modes
 - Point to point videoconferences
 - Multi-site videoconferences



Addenbrookes

Papworth

Bedford

Peterborough

ISDN Connection

West Suffolk

Hinchingbrooke

Kings Lynn

Multi-site Bridge

West Anglia Cancer Network Videoconferencing Network for Cancer Multi-Disciplinary Team Meetings

Welcome to the conference

Conference 1: MDT Snapshot - Microsoft Internet Explorer

TANDBERG

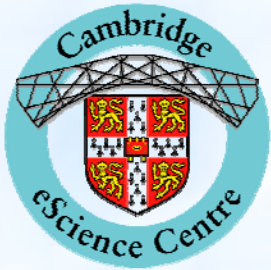
Secure conference Encryption required



The Bridge – A Virtual Space

- Services
 - Encryption
 - Password protection
 - Scheduling services
 - Connects up to 16 sites in 3 conferences





End Points – The codec

- Tandberg 880
 - *Hand held remote control*
 - *Integrated W.A.V.E Camera*
 - Pan
 - Tilt
 - Zoom





N3 – At the Cancer Centre

- N3 Go live at Addenbrookes completed, migrated to IP
- PACS integration with telemedicine applications July 2005, integrated digital imaging



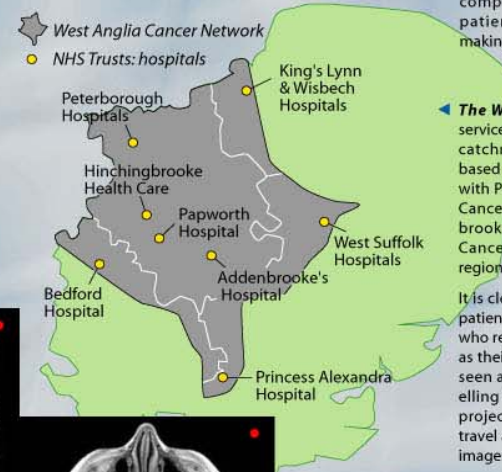
Telemedicine: delivering collaboration through eScience

This joint project between **Cambridge eScience Centre, University of Cambridge Department of Radiology and the West Anglia Cancer Network** will demonstrate the capability of technology to improve the delivery of patient care in the West Anglia region and, potentially, throughout the National Health Service by providing distributed clinical teams with access to advanced collaborative environments.

The project will provide a secure infrastructure for a collaborative environments, using:

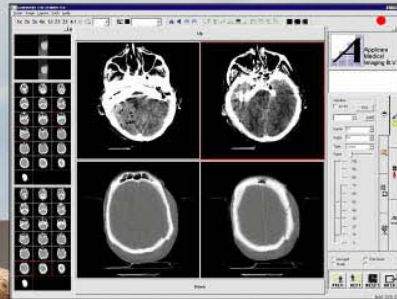
- multi-site videoconferencing
- real-time delivery of microscope imagery
- communication and archiving of radiological images to support multi-disciplinary team meetings for the review of cancer diagnoses and treatment.

We also hope to demonstrate the feasibility of remote computational medical simulations and the data management of patient record databases to improve the clinical decision making process.



◀ **The West Anglia Cancer Network (WACN)** provides services for a core population of 1.6 million and has an overall catchment area of 2-4 million. The Centre for the network is based at Addenbrooke's Hospital in Cambridge in collaboration with Papworth Hospital for patients with lung cancer. Cancer Units at Bedford, King's Lynn, Peterborough, Hinchingsbrooke, West Suffolk and Harlow hospitals together with the Cancer Centre at Addenbrooke's serve the remainder of the region.

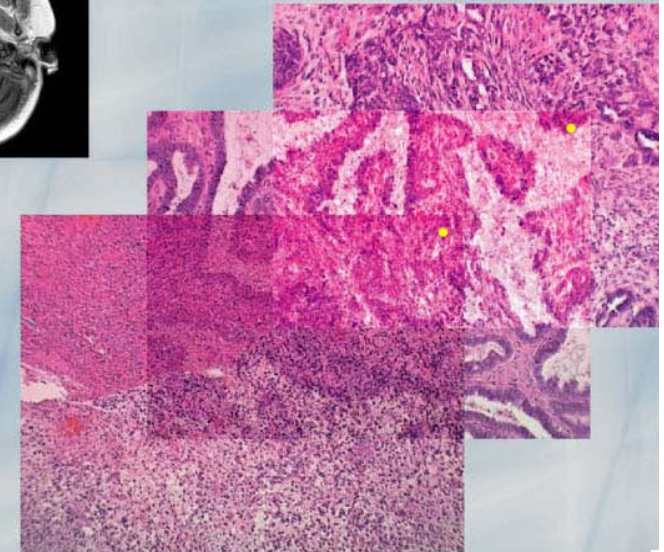
It is clearly desirable to provide care as near as possible to the patient's home. Continuity of care is also maintained for patients who require treatment at the Cancer Centre (eg for radiotherapy) as their treatment is planned by the same Consultant team seen at their nearest Cancer Unit. Clinicians are currently travelling large distances to provide remote clinical services. This project will investigate the use of technology to prevent this travel and provide access to appropriate clinical information and images across the network.



Brain scan



Multi-disciplinary team meeting for Gynaecological Oncology



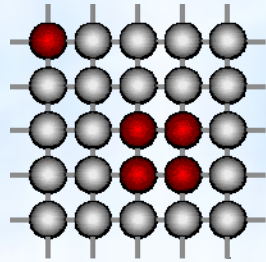
Pathology



Industrial support for this project is kindly supplied by Siemens Medical Solutions and Macmillan Cancer Relief for further information please contact: admin@esience.cam.ac.uk <http://www.esience.cam.ac.uk/projects/telem.html>



Telemedicine in Action



CancerGrid

- Project Partners



University of Cambridge



UCL



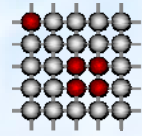
University of Oxford



University of Birmingham

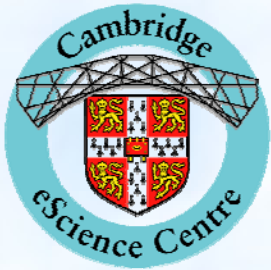


Queen's University Belfast



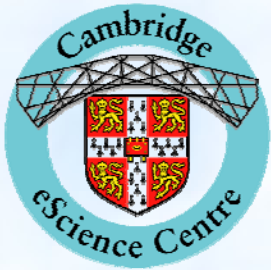
CancerGrid Objectives

- More efficient clinical trials
 - Shorten time from proposal to start up to closure
 - Reduce overall IT costs in the face of increasing regulation
- More effective clinical trials
 - Metadata for better data analysis and re-use
 - Structured data elements for data capture quality
 - Integrated laboratory and clinical informatics for statistical analysis



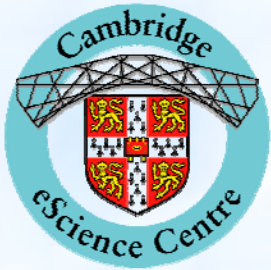
Goals for Cancergrid (1)

- Enable team collaboration across all 5 Cancergrid sites
- Build a demonstrator for clinical trials
- Reduce need for travel - budget
- Ensure collaboration and co-operation
- Build a virtual organisation



Goals for Cancergrid (2)

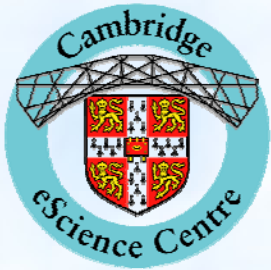
- To create a collaborative environment that supports
 - Secure virtual meeting rooms
 - Communication and informal interactions that do not depend upon physical proximity: for example, the virtual equivalent of unplanned corridor conversations



Goals for Cancergrid (3)

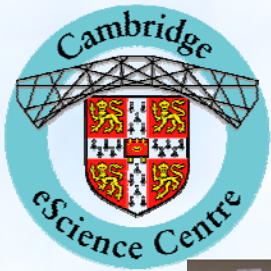
- Enable the co-ordination of clinical trials
- Support for communication about data and results
 - not just via publications and conferences, but also through informal interactions that do not depend upon physical proximity
 - for example, the virtual equivalent of unplanned corridor conversations



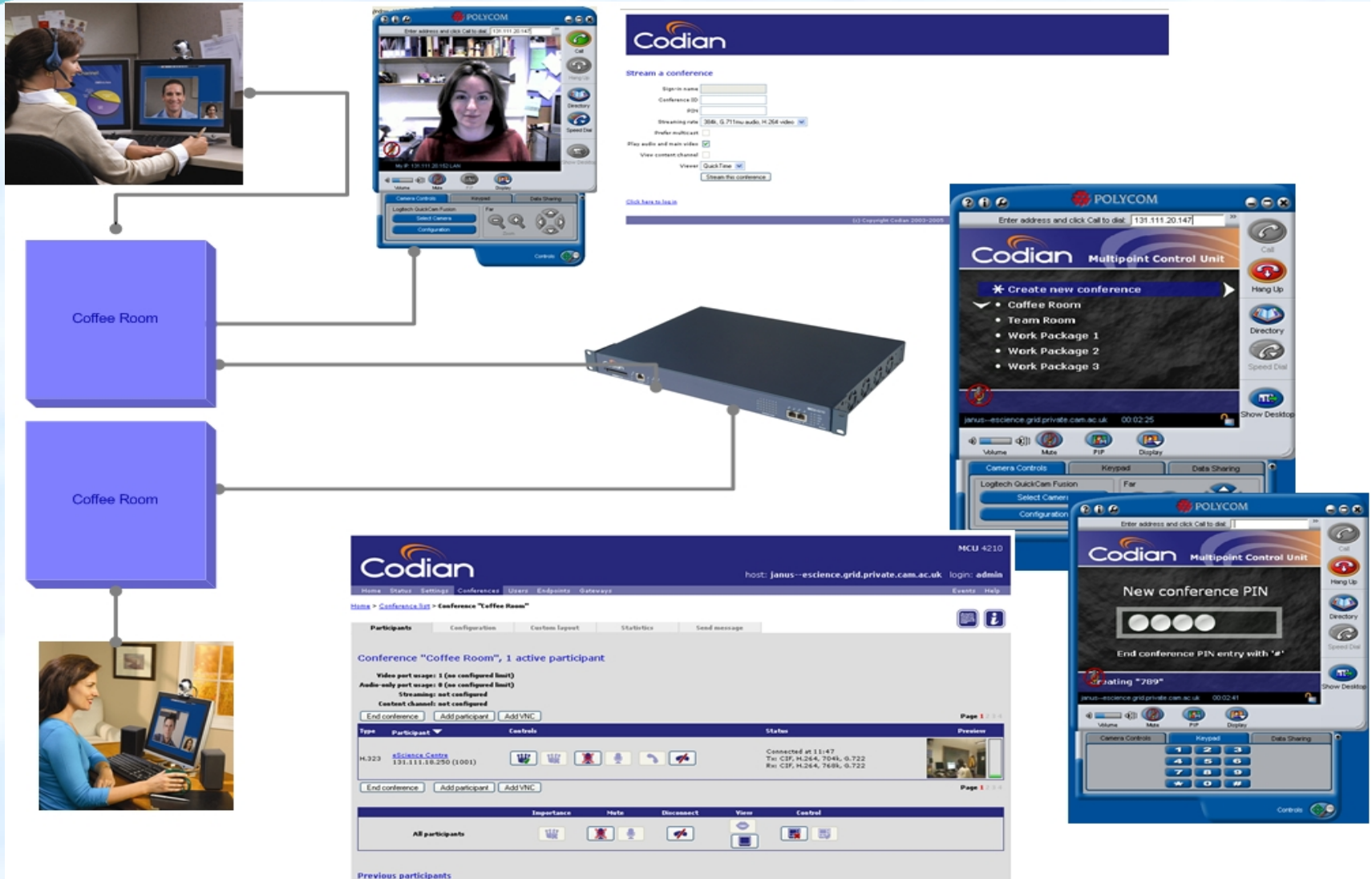


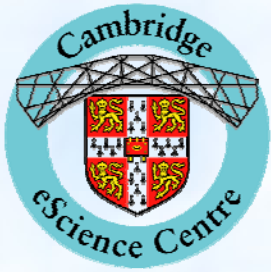
Model for Cancergrid

- Limited budget
- Multiple concurrent connections
- Scalable endpoints
- Portable endpoints
- Ease of use for non-technical staff
- Flexible functionality



The Cancergrid Environment

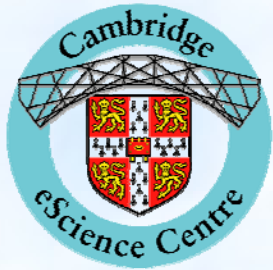




Infrastructure

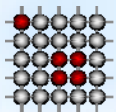
- Codian Bridge (MCU)
 - Invest in infrastructure
 - 20 concurrent connections
 - Limitless virtual rooms
 - Auto attendant dial in
 - Flexible user environment



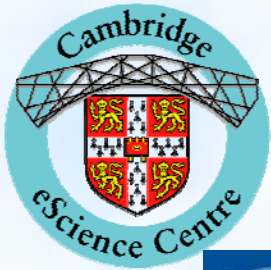


End Points

- H.323 end points – IP videoconferencing (standards based)
- Software codec
- Low cost / High quality
- Webcams
- Headsets
- Supporting Documentation



CancerGrid



Multi-site Control Unit - Bridge



- Auto attendant
- Voice prompts
- Multiple virtual rooms
- Easy navigation
- High bandwidth
- User controls the experience



CancerGrid Collaboration

