NETWORKSHOP 42
AT UNIVERSITY OF LEEDS
1–3 APRIL 2014
SAVE THE DATE
#nws42

THE Pirbright INSTITUTE 10 YEARS

Overcoming issues of delivering IT services in high biosecurity containment.

Wireless, VDI and Microsoft Lync

cae TECHNOLOGY TOGETHER

BBSRC bioscience for the future

The Pirbright Institute receives strategic funding from BBSRC.

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Agenda

- Who are we and what do we do.
- Overview of why we need Biosecurity and what it is.
- Introduction to our new Laboratory.
- Examples of how Biosecurity issues will affect service delivery in the new Lab.
- How we are looking to deliver them.
- Lessons learned and looking forward.

The Pirbright Institute??

- Founded in 1914.
- Research and surveillance to prevent virus diseases of livestock and virus transmission from animals to humans
- Currently hold reference lab status for a number of high profile diseases including.
  - Foot-and-mouth disease
  - Swine vesicular disease
  - African swine fever
  - Rinderpest
  - Bluetongue
  - African horse sickness
- Receiving strategic funding from the Biotechnology and Biological Sciences Research Council (BBSRC)
- We have the largest number of people working under high level biosecurity conditions on a single site in the UK

Why do we need Biosecurity

- To protect the people working with the viruses.
- To provide a clean environment in which science can carried out with minimal possibility of contamination.
- To prevent the release of viruses that could cause wide spread economic damage.
  - 2001 cost the UK £8bn

What is it?

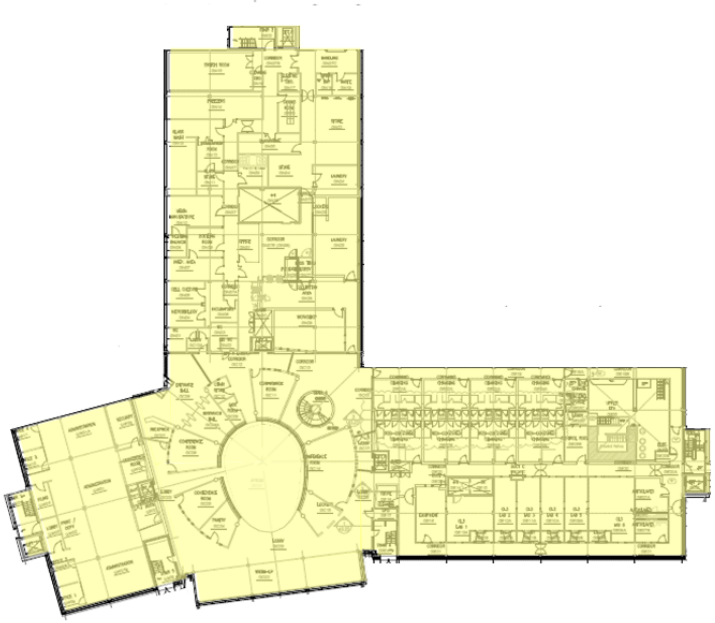
- Preventive measures designed to reduce the risk of transmission of infectious diseases in crops and livestock.
- We are covered in all our laboratories by the Specified Animal Pathogens Order 2008, licensed up to and including the highest Level.
- Nothing comes out with out getting treated, No equipment, No Air, No water, No waste, No person.

Development Project 1

- New High containment laboratory to house 300 Scientists and 100 support staff.
- Designed to contain up to and including category 4 pathogens
- Design started in 2002, with building commenced in 2011.
- Practical completion of construction in January 2014
- Testing, commissioning and licencing expected to be completed by Q4 2014

Basic facts about the building.

- Each wing is 42meters in length, with a large central atrium
- Over 3 floors of plant rooms to support 1 floor of labs.
- Meeting rooms and canteen are all inside containment
- Multiply levels of containment with in the building, increasing as users move from write-up areas into corridors and individual laboratories.
- Will house the largest number of scientist under a single containment system in the UK



Pictures from inside.

Negative Air Pressure

Double doors

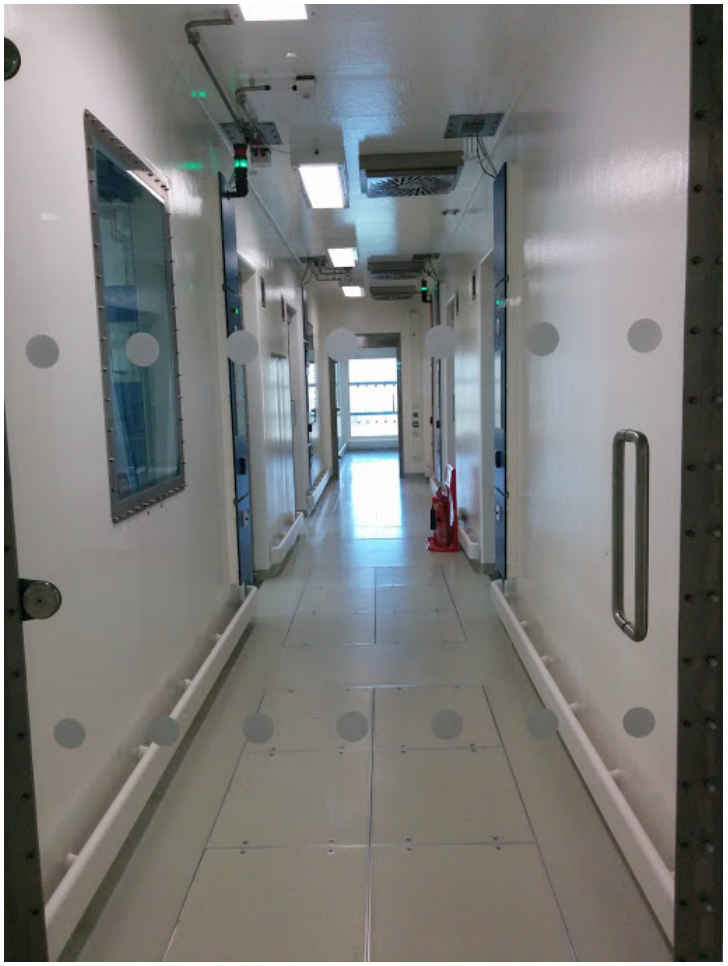
Air Tight Sealed Walls.

Reinforced construction

IT Infrastructure (cabling)

Roxtec seals

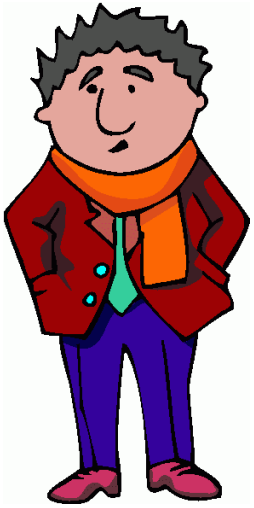
Limited Network sockets



No network points in Corridors

Getting in and out of the building, Users

- Shower in
- Complete change clothes
- No personal items in to the building
- Change of over clothes may also be required moving between areas. Partially over shoes and lab coats.
- Nothing comes out on a person. (12 minute times shower to get out; 3 washes).



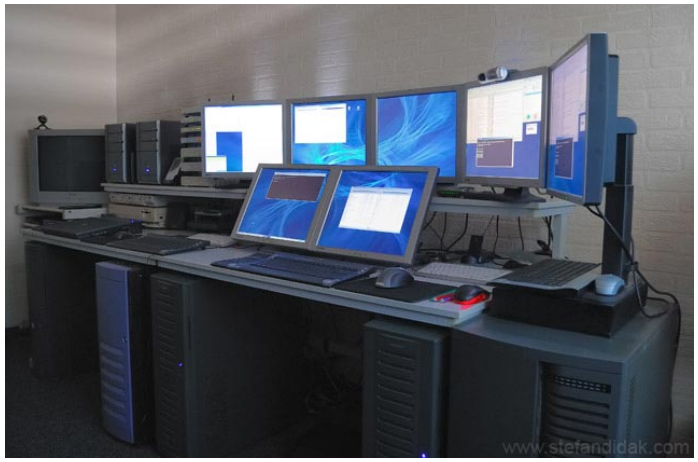
Moving Equipment in and Out.

Autoclaves

Dunk Tanks

Fumigate Cabinets

Scientists are not your average IT user.



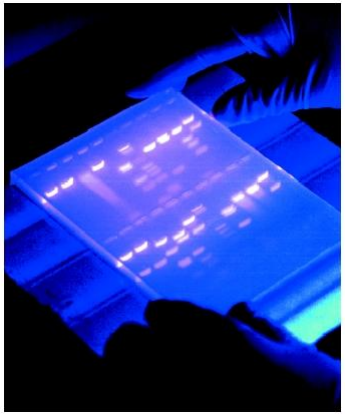
Our Work place.

Their work place.

But they are still at the cutting edge of technology

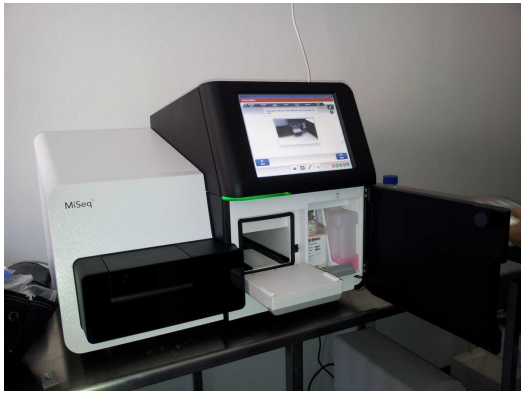
Plate Readers

Electron Microscope



DNA gel electrophoresis

Gene Sequencing



Considerations when delivering IT.

- Different Users require different services.
  - Lab areas = reading documents and taking notes.
  - Write-up areas = full desktop experience.
- Not much space in labs for IT equipment
  - Labs are for science, not for admin work.
  - Workspace is expensive.
  - IT equipment is just another tool for a scientist and not the focus of there day.
- Flexibility in what devices we can deliver to.
  - The right tool for the right task.
- Flexibility in where we can deliver services to.
  - Multiple workstation in laboratories.
  - Multiple rooms they will require access to.
- Communications.
  - When scientists may work in 3 or 4 lab locations and write up areas, the require a solution that that allows them to be contacted and contact others in a consistent reliable way.
- Supporting it all.
  - Support staff getting access to equipment
  - Replacing faulty equipment difficult
  - Keeping as much support and hardware out side containment as possible.

Solutions

Microsoft
Lync 2013

Mobility/Wireless

- Flexibility of delivery both location and device.
- Doesn't support highest Bandwidth.
- Reduced the need for physical network points.
- We expect 90%+ of IT services in the labs to be delivered over wireless.

Delivering Mobility

- Cisco Wism2 HA controllers for resilience.
- Cisco Prime to manage the infrastructure.
- Cisco ISE to provided network authentication and authorization.
- Mobile Iron already used for BYOD.
- 702w Access points, designed for Laboratories.

- Together this set up should allow us to support a wide range of devices over wireless, and a large scope moving forward.

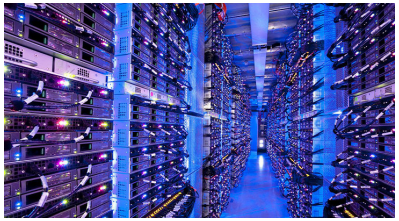
- We have discussed,
  - Asset tracking
  - Location tracking
  - Lone worker alarms
  - Wireless point extended to support 3G services.

VDI .

Multiply End Points

Work Space

Cost



The Back End

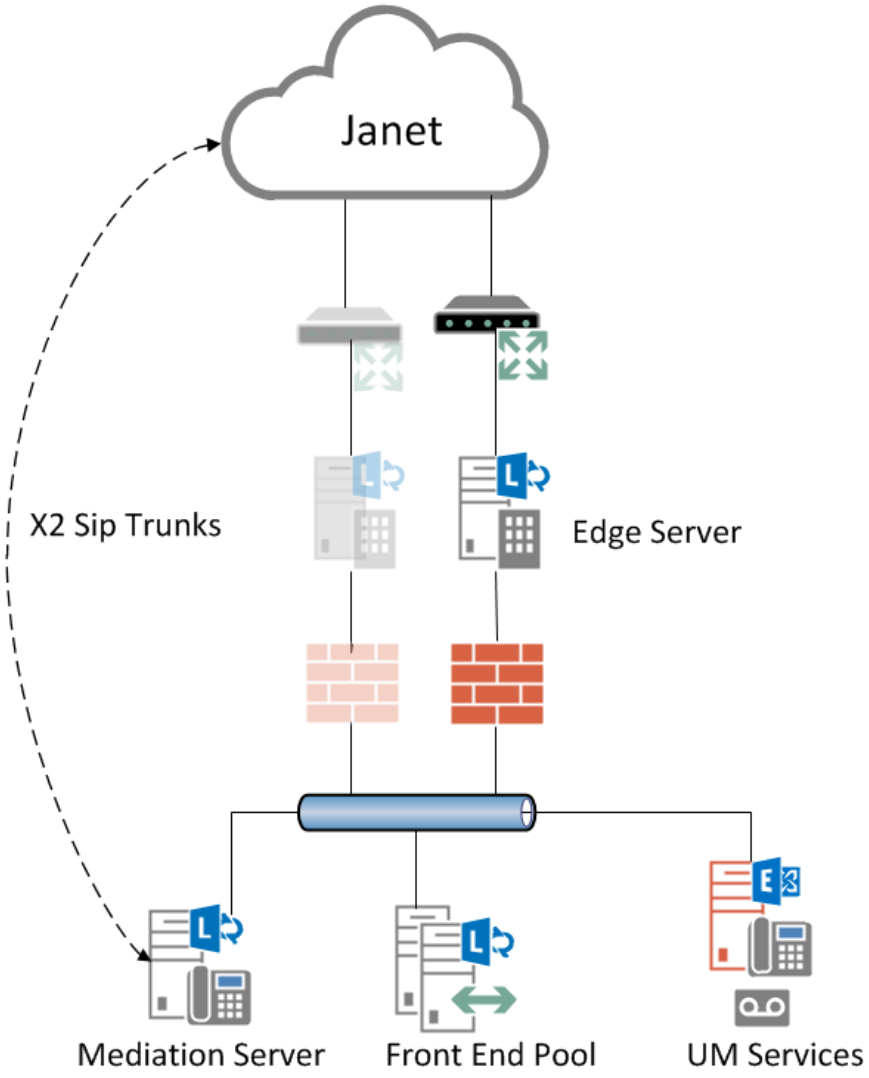
Delivering VDI

vmware®

CITRIX®

- Space savings
- A single point of contact where users are.
- Full VoIP features, numbers that roam with the user, call forwarding, voice mail, conferencing and address book
- Flexibility in how the scientists can communicates, pager/voice/email.
- Internal and external communication.
- Cost / Savings over existing infrastructure.

Delivering Lync



Usual Suspects

Old School

New Kids

All Together

What I have learnt in the last 2 years developing the solutions.

- There is no one solution fits all when dealing with biosecurity. But trying to minimise the number of solutions is important.
- Getting the design right first time in a building like this is crucial.
- The Desktop / Laptop model that was current only 2 or 3 years ago is out dates.
- Tablets and mobile devices are here to stay, not just as user owned BYOD, but they are soon going to be a primary device for many users. Like at home users will expect to be able to switch between multiply devices seamlessly and quickly.
- If a device / solution provided 100% of the users requirements, then this is what we should be aiming to provide them, not asking them to change there way of working to fit us.
- Always Keeping in mind how we will be able to developed and build on the solutions to grow with their needs.

Not there yet.

- While the research and design work has been done we are still in the process of implementing our plans. Particular around the VDI platform.
- VDI is being reviewed before choosing the final solution.
- Wireless, we are waiting on the delivery of new access points developed for hospital/labs by cisco. However the core wired and open area wireless has been configured and is in the process of being installed.
- Lync, after a successful test over the last year, we are increasing our Lync estate and introducing SIP trunking over Janet.
- The next 4 – 5 months are all about bringing this together, for a go live date in September.
- Getting it right will mean having a modern world leading Biosecurity Laboratories. With happy scientists and users, for which the IT systems improve their working environment and quality of research.

- Thanks
  - The IT Crowd,
    - Toby, and Morgan,
    - Jon, Brandon, Paul, and the service team back at base
  - The site development team,
    - Lead by Garath who have had put up with the IT geek sitting in on there design and validation meetings. And even kinder listened to our input, and made some quite radical changes to insure the building will work for us
  - CAE,
    - Especially my account manager Phil English who along with his team has put up with my constant reworking of ideas, and bugging CISCO for me to get hold of the best prices and latest equipment.
  - BBSRC,
    - For there continued funding and support of out work.