HDMI over IP

A novel remote live lecture broadcast technique

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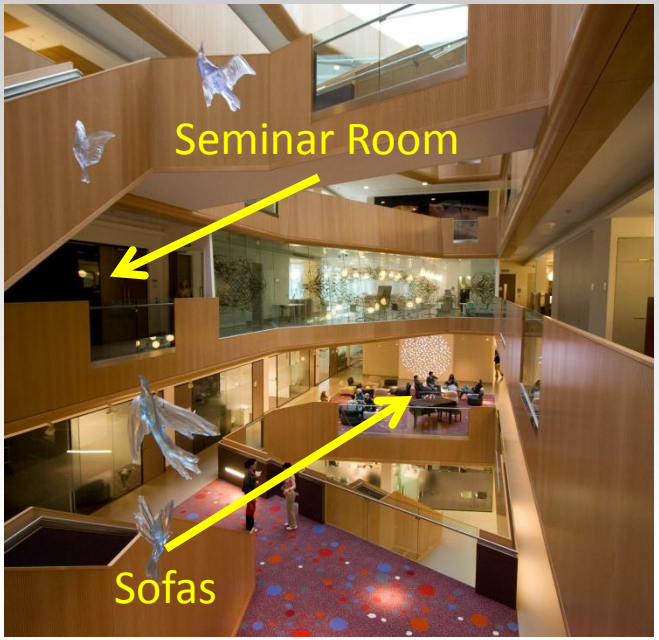
The challenge

- Hiring lecture theatres is expensive, but our Main Meeting Room only holds 100 people
- I was asked to find a way to transmit seminars live to our Atrium for less than £10,000
- Key requirements: High quality and no software



Initial research

- Plenty of web encoders available
  - Catch is, they are either expensive or low quality
- Aim was to ensure retention of original scientific image and video quality
- Also need to allow the remote audience to see the speaker
  - Looked into live video overlay equipment, but again this was too expensive or of low quality

An alternative approach

- HD TVs are cheaper than live video overlay equipment, especially given we had a spare
- I already had access to an HD video camera
- VGA to HDMI conversion is relatively inexpensive
- Aim – Find a way to get two HDMI signals to two TVs; one for the PowerPoint and one for the “Talking Head” video

A possible solution

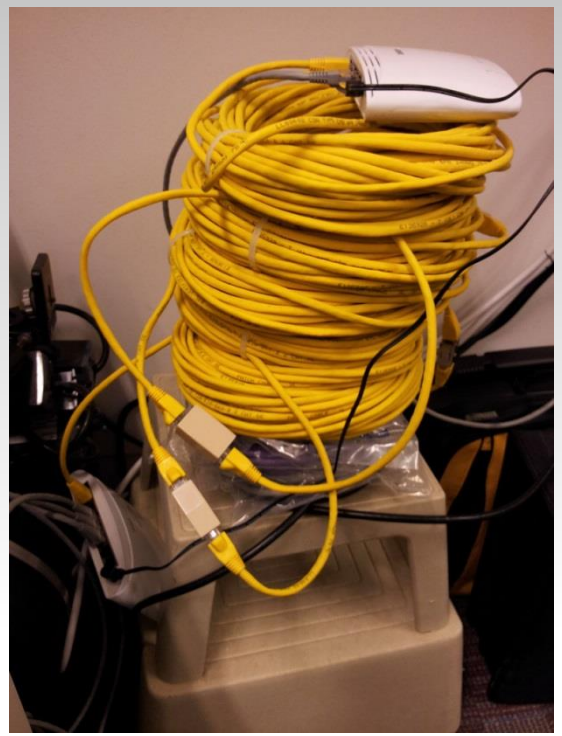
- We've used VGA over Cat5 in the past
- Catch is, the distances involved are over 100m
- Tried searching for "HDMI Cat5" anyway and got:

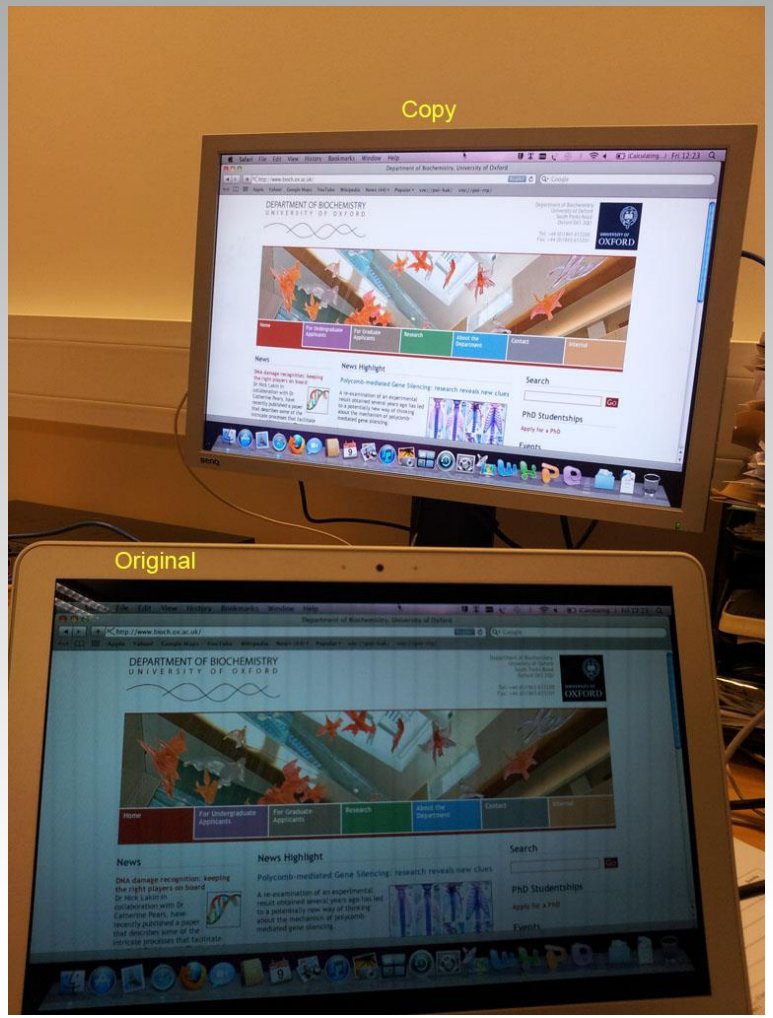
“HD over IP” device features

- Uses proper IP packets
- Can traverse switches
- Needs its own VLAN
- Standard Ethernet, so each switch interlink can be up to 100m long
- Pricing looked to be affordable
- Free trial pack of three T/R pairs available

Tests (Part 1)

- Two switches with 100m cable – Works

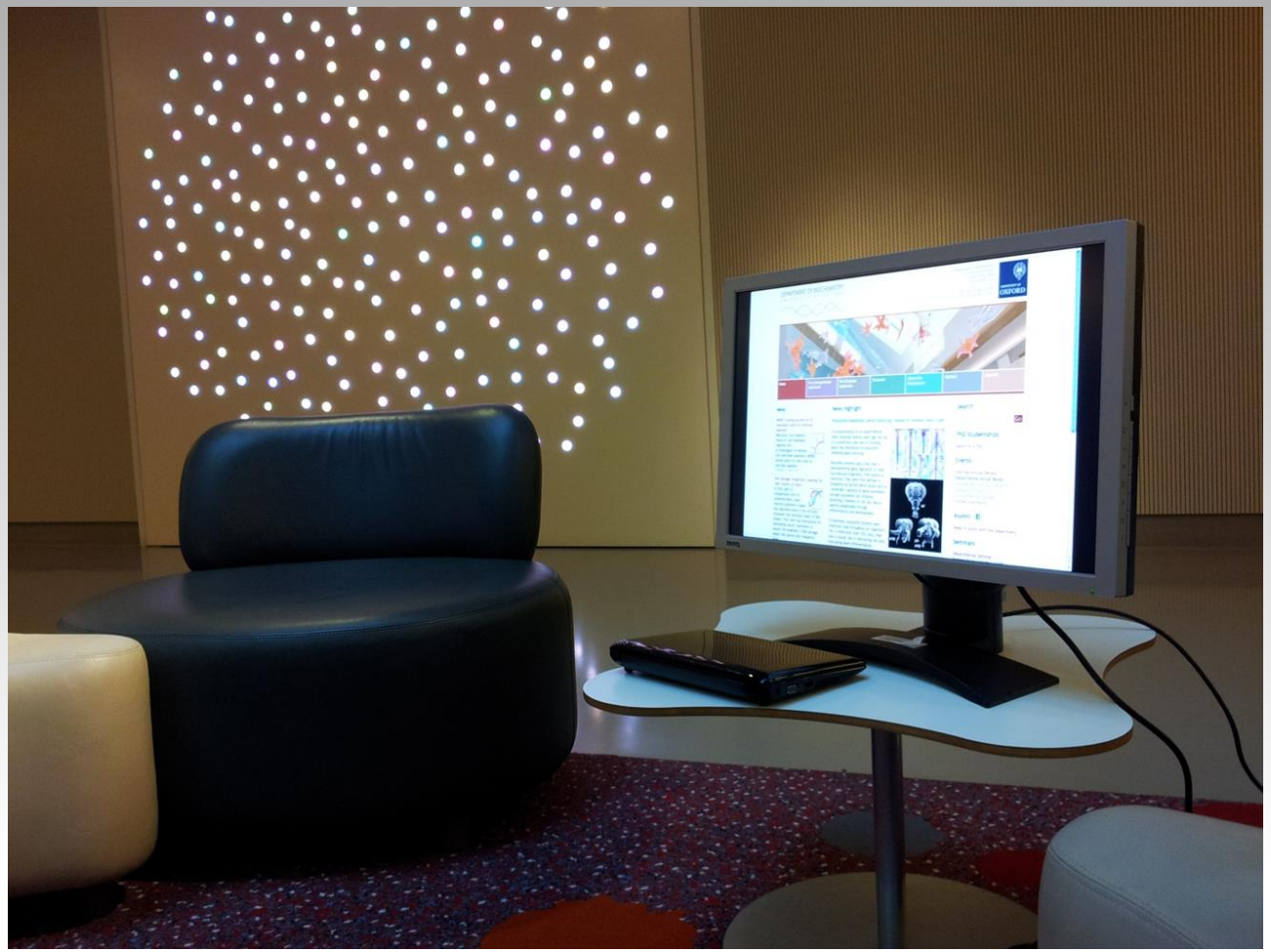




Tests (Part 2)

- Trunked VLAN – failed
  - Needs dedicated lines (i.e. carrying only one VLAN)
- This ruled out using the standard network as floor-to-floor routes via the basement using aggregated, trunked lines
- Solution was to drop a patch lead from ground floor network cabinet to lower ground floor network cabinet via riser.
- Just needed two ports assigning to a “Screen” VLAN

Success



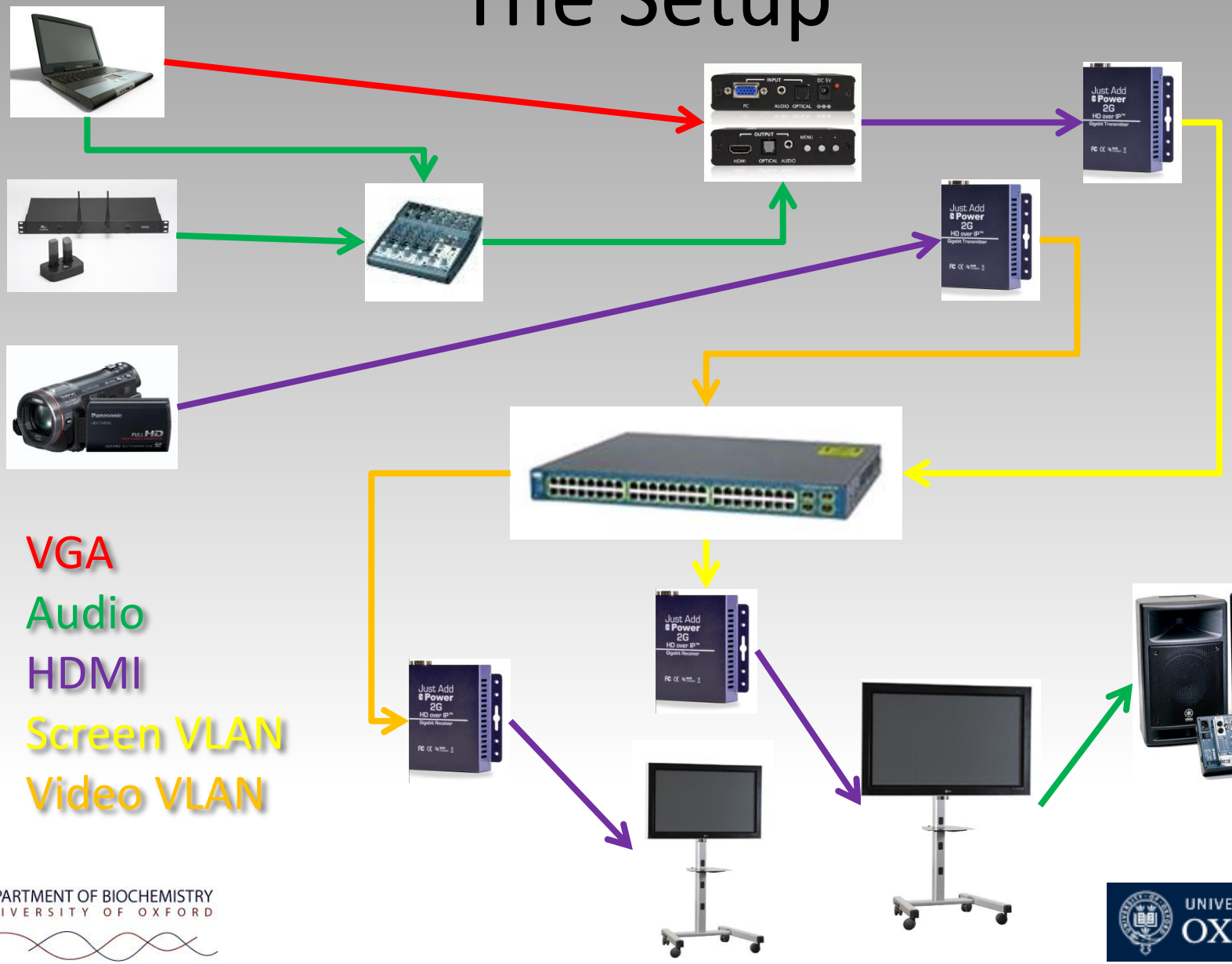
Audio

- Radio Mic for lecturer – we chose Revolabs
- No audio on second monitor, hence mixer to add laptop audio
- Audio and presentation video merged into single HDMI feed
- Plug PA into TV headphone socket. Means TV remote works.

Talking Head

- Mini HDMI to HDMI cable from camera to “HD over IP” transmitter
- HDMI to DVI-I cable from “HD over IP” receiver to monitor
- Remember to turn off face recognition!

The Setup



First use


• Advantages of pharmacological approaches:
– Targets all muscles
– Cheaper to deliver
– No immune response
– Mutation independent


SMT C1100: first in-class drug for utrophin upregulation in DMD therapy

Links

- Just Add Power "HD over IP" device
- Revolabs HD Venue wireless mic system
- VGA to HDMI® Audio Video Converter with Scaler
- Yamaha StagePAS 300 PA system
- New equipment cost - £3,888 + VAT
- Existing equipment approximately - £1,837 + VAT (excluding network infrastructure)

- This presentation can be found at http://www.ictf.ox.ac.uk/conference/2013/presentations/pk5-jeremy-rowntree-hdmi-over-ip.pdf