

BBC CYMRU WALES CARDIFF CENTRAL SQUARE IP LIVE CORE IMPLEMENTATION - REVIEW

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WE'VE DONE IT!

- Central Square is now live on-air from BBC Cymru Wales to the whole of Wales for Radio and TV
- Media Production facilities are in use and the News TV Studios will be live a few days after this presentation
- Overall project timelines have been met (although Covid-19 lockdown added a few complications as we neared the end)!
- We have delivered a significant amount of technical innovation, taking our key stakeholders with us on the adventure by managing the risks and delivering a facility that works
- We have embedded Information Security into our design and testing from the outset



WHAT WENT WELL?

- The ST2110 standard wasn't ratified when we started but it works well and hasn't given us any major problems
- ST2022-7 protection just quietly does what it needs to do
- The Cisco network fabric (Nexus 9508 & 9236) has been reliable
- Work on security of the system led to us developing a new model for our monitoring and control network
- Collaboration between the project team, BBC R&D, vendors, our systems integrator and other broadcasters
- Adoption of formalised test (Testrail) and project management tools (Jira)



WHAT DIDN'T GO SO WELL?

- Control has been very difficult. We held out for NMOS but it arrived too late for our timeline. We have been limited to proprietary control which has added a lot of constraints
- Nowhere near enough vendors offered directly connected IP kit, meaning we still depend on gateways, and these impose limitations regarding video formats and timing
- Configuration is still entirely manual with no use of automation. This makes it very time consuming and error-prone
- Integration of audio (AES67 & Dante) was difficult. We ended up with a good fabric for this but with too much control complexity
- UHD is over-complicated by quad connections, too many options and confusing standards (e.g. 4K versus 4k)



WHAT'S STILL MISSING?

- A means of directly orchestrating all endpoints and not just using IP for point-to-point links. NMOS should address this
- Workflows that truly embrace IP opportunities rather than just changing the plumbing
- Tools to manage the deployment of such a large system. (Although others, notably CBC, have progressed this)
- A way of doing synchronisation that doesn't break the bank. Better still how about being able to go asynchronous?
- A move away from 'SDI thinking' by vendors
- A sensible means of starting to connect into the cloud



WHAT HELPED US ON THE WAY?

- Good support from our key vendors
- Collaboration within the project and with others
- Testing, more testing and even more testing
- The use of formalised approaches to testing
- The JT-NM Tested Programme and the EBU Pyramid
- Specialised test equipment including EBU LIST and Tektronix Prism
- Knowing we were doing something ground-breaking



IT WASN'T JUST ABOUT IP INNOVATION!

- Highly efficient apparatus room with hot aisle containment for just under 200 racks and a PUE figure of around 1.25
- Extensive environmental and power monitoring
- Extensive use of virtualisation for broadcast servers
- Wide deployment of fibre connectivity throughout the building with multiple wallboxes and external connections
- All HD (with some UHD) and all digital
- A single centralised Comms System
- No RF ringmain

