



VSC Design revitalise the BT Tower

The iconic concrete and glass circular BT Tower might be considered a piece of vintage architecture on the outside, however, on the inside it plays host to a state of the art television facility.



The BT Tower Facilities

The BT Tower is BT's central London monitoring and control hub for its own platform of TV channels and also provides content distribution services to other broadcasters. While the Tower was commissioned by the GPO in the 1960's with its primary purpose to support microwave aerials and then used to carry telecommunications traffic from London to the rest of the country, its capabilities have now evolved today to encompass High Definition, 3D, and 4K Ultra HD. These services are delivered across both fibre optic full bandwidth point to point links and over IP encapsulated networks. With the launches of the highly successful BT Sport and BT Vision packages there was a requirement to transform the International Media Centre (IMC) at BT Tower to keep pace with the technology advances in both production and delivery. The IMC is designed to function 24/7 365 days of the year and provide monitoring across numerous platforms. To achieve this BT embarked upon a major upgrade, which had to be completed while the IMC carried on live operations. Here, we look at how the operational areas were re-designed and re-built during the 2014 'Summer of Sport' which included both the FIFA World Cup and the Commonwealth Games. BT's Media and Broadcast Operations Director James Pearce elaborates, "We asked VSC Design to come

in and do a design and an upgrade of our operational systems and tools in the International Media Centre. There was a lot to do, including the installation of a new infrastructure for all of the desks and monitoring, the video walls, and all of the backend systems this entailed. The project involved the physical build, the layout, the installation, power and the specialist TV/broadcast related tools. It could have been painful due to its very nature, however, VSC met or bettered all of our tight deadlines and the changes went smoothly."

Summer of Sport

2014 was a 'Summer of Sport', and the BT Tower was used for switching feeds to clients and for second and third line support to the vision services. The IMC operates 24/7 and covers all live sports, including international Football, Rugby, UFC, Baseball and MotoGP. It played a pivotal role in the Commonwealth Games and the FIFA World Cup. It plays a diagnostic and support role as well as the operational switching. Accordingly, there were dates when no operations could take place on site. For the re-design and upgrade, there was just a small window of opportunity, working between the FIFA World Cup Finals and the Commonwealth Games, so it was key to plan the project deliverables to fit between those dates and critical to meet the deadlines without slipping.

The iconic BT Tower was originally set up as the centre point of the British Telecom microwave network which now relies on both satellite and subterranean fibre optics links. With BT TV and the launch of BT Sport in 2013 now based at the re-purposed International Broadcast Centre, Stratford, now called the Queen Elizabeth Olympic Park, the need for an efficient and modern facility increased radically. BT's central London production and post-production hubs took advantage of the facility upgrade which was utilised in time for the Commonwealth Games in Glasgow 2014.

Established Relationship

VSC has enjoyed a long and well established working relationship with BT, working on various projects since 2006 and is familiar with the difficult challenges faced with such a unique building.

"We have worked with BT over a number of years, so we are familiar with the layout of the tower, the legacy, infrastructure and the constraints of working in this environment." explains John Hartz, Projects Director for VSC.

"Support is really important and it needs to be reliable, so we are providing a support contract as part of the re-design project. In fact, our company's mission statement is 'Evaluate, Plan, Deliver and Support'. While we support some clients as far away as the Middle East and Africa, our location is a huge advantage for BT, as we are based just 12 miles or so from central London we can be on site within an hour. This makes a huge difference to the service level we can provide." James Pearce continues,

"The reason the re-design was such a success was down to the planning and engineering and the way the teams worked together on the infrastructure - not turning things off while we needed them. The great thing was that everyone was very open and honest in the way they connected and collaborated with the various people involved, which made the project a real success."

Today, the IMC manages a head end carrying 140+ channels of video and a complex network monitoring and control system that delivers Quad-play broadcast services.

BT Media and Broadcast has upgraded to a Snell Sirius 830 routing system and three MV-Series multiviewers to support the television outside broadcasting (TVOB) operations for the BT Tower all of which have been installed by

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James Pearce, BT Media & Broadcast Operations Director



VSC. The IMC was designed to last well into the future with 39 operational monitoring positions, each with multiple screens and tablets, combined with traditional rack mount panels close by. Besides these, monitor walls display a mix of baseband and PC-originated signals.

Careful Planning

With many contractors working on site, planning was crucial. For example, the processes meant collaborating with the civil partners, who were responsible for the site overall, the BT project managers and with the Operational Teams. The specialist requirements for a live broadcast facility meant operations had to be kept flowing smoothly with the room still capable of providing a level of service, albeit reduced. VSC worked closely with BT and BT's civil contractors to design a migration method so that the new layout and development of equipment could take place in phases, without disruption. VSC attended site meetings to deal with aspects such as the cabling and service infrastructure in the floors. "We spent a lot of time negotiating the process - then there was a quick and efficient delivery at the end" adds John Hartz. There were three distinct phases, the re-build, the furniture and systems integration, and finally the design and installation of the standalone equipment. Utilising VSC's West London premises to assemble, test and commission the equipment prior to installation was invaluable.

BT adheres to industry standard processes and project procedures. "We needed to make sure any methodology didn't hold up the project," John Hartz explains, "If we anticipated that an issue could stop the project flowing, we would engage in processes to keep it moving and avoid any delay."

Key items of technology deployed included an additional Miranda Kaleido KX7 multiviewer, an Intelligent Display System (IDS) for digital signage and a new Riedel Artist talkback system. The Miranda Kaleido KX7 is linked via an expansion bus to an existing KX7 used by BT's Sport Service Management Centre (SMC) which VSC installed in 2013. This non-blocking source bussing offers the capability of up to 192 3G-SDI sources to be seen across 12 display heads and gives the ability to call up specific operational views in either location enabling a collaborative platform environment. The IDS digital signage system brings together clocks, branding graphics, building alarms and text information screens all into one coherent interface that can be centrally managed and distributed throughout the building over ethernet to strategically positioned displays. The Riedel Artist talkback system has 50+ panels connected to it in BT Tower along with VOIP connectivity to BT Sport's Hub at iCity in the Queen Elizabeth Olympic Park.

Complete Re-Design

The project involved a complete re-design of the IMC. The previous layout, which BT wanted to evolve onwards from was arranged with the monitor wall at the



front and rows of curved desks all facing towards this wall, like a traditional NASA control room. VSC's new design allows for a more collaborative style of working.

John Hartz describes the design approach: "We had looked at what was not working, the rows of desks facing forwards, facing to large screens, and looking over other people's heads was not ideal. Staff members need to be able to move around freely, turning to collaborate and confer. The new configuration allowed for more space to walk around. This new setup increases efficiency and the client loved the new working environment."

For the actual upgrade, the IMC was divided into two halves. The changeover was planned with precision and huge attention to detail. While the first half was being set up VSC fitted out the desks, with their screens, tablets and cabling one at a time. With 39 positions, there were lots of intricate migration steps required as each position was set up in turn to ensure the user had the optimal operational environment whilst still maintaining and enhancing the associated technology. The positions are all designed to the same template, with enhancements to some, and the new design allows people to move around the desks which is much more flexible for operations.

"We feel that VSC delivered over and above the deliverables in the contract and made a huge contribution to the

success of the whole project," says James Pearce. "They were always willing to do a bit extra to make sure we were really pleased and gave us the benefit of their experience, for example by making recommendations. This gave us real value for money. And because we were working with the cabling and the infrastructure, the fact that we had a team on site who knew where things should go and how it all worked, gave us a great deal of confidence. It de-risked this major re-design and upgrade considerably for us."

VSC Design Ltd

Established in 1989, VSC Design has been operating as an internationally recognised engineering led, System Integrator with a wealth of experience covering every aspect of system implementation and project delivering across a variety of technology platforms. Each project, from conception planning through to the detailed design and project management and implementation of fully operational systems is bespoke. VSC has rightly earned a reputation which is second to none within the broadcast industry and continue to provide a dedicated service of the highest standard of engineering excellence and customer service to its clients.

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John Hartz, Projects Director for VSC.

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