



FIFA WORLD CUP  
RUSSIA 2018

# The International Broadcast Centre at the 2018 FIFA World Cup Russia™

FIFA TV Services

May 2018



# The International Broadcast Centre (IBC)

## Overview

The IBC is the nerve centre of all TV and radio operations covering the FIFA World Cup™.

It is where the host broadcast feed for all 64 matches will be turned around and beamed to TV and radio sets all around the world. Additional content will be produced here as well: daily highlights shows and team updates, story features and promos, to name just a few. It is also the headquarters for all Media Rights Licensees (MRLs), the national and regional broadcasters who have paid for the right to show FIFA World Cup™ matches. There are currently 74 MRLs who will have production and office space at the IBC.

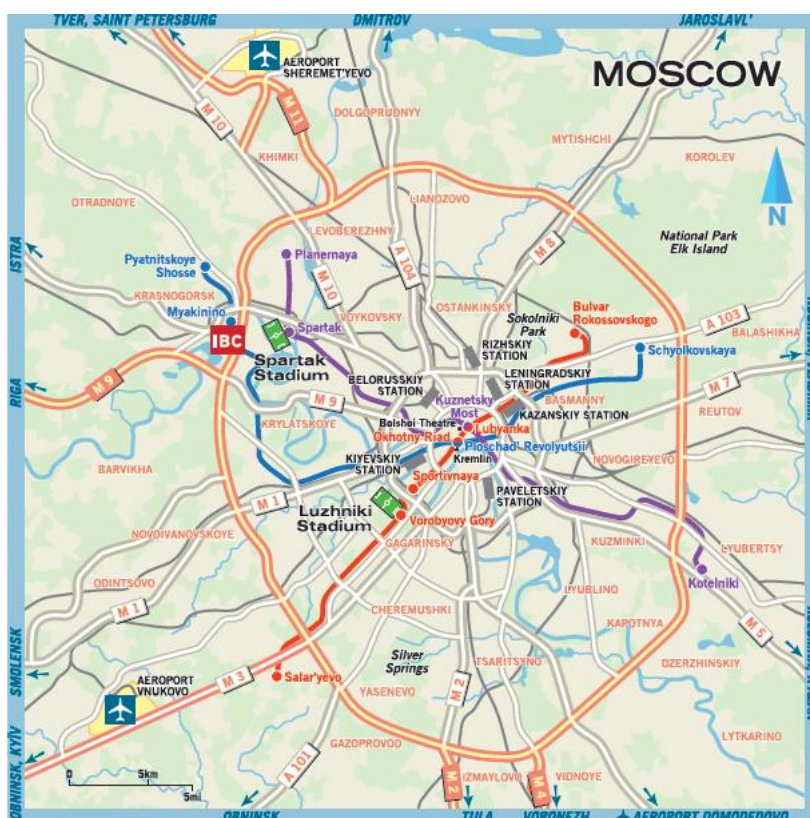
It also houses studios and interview suites, where presenters and football experts will analyse the action on the pitch day and night over the course of the competition.



## Location and layout of the IBC

### Location

The IBC for the 2018 FIFA World Cup Russia™ is located in the Crocus Expo International Exhibition Centre, which is situated to the north-west of Moscow and, being located just outside the MKAD ring road around the city, is considered part of the wider Moscow region.

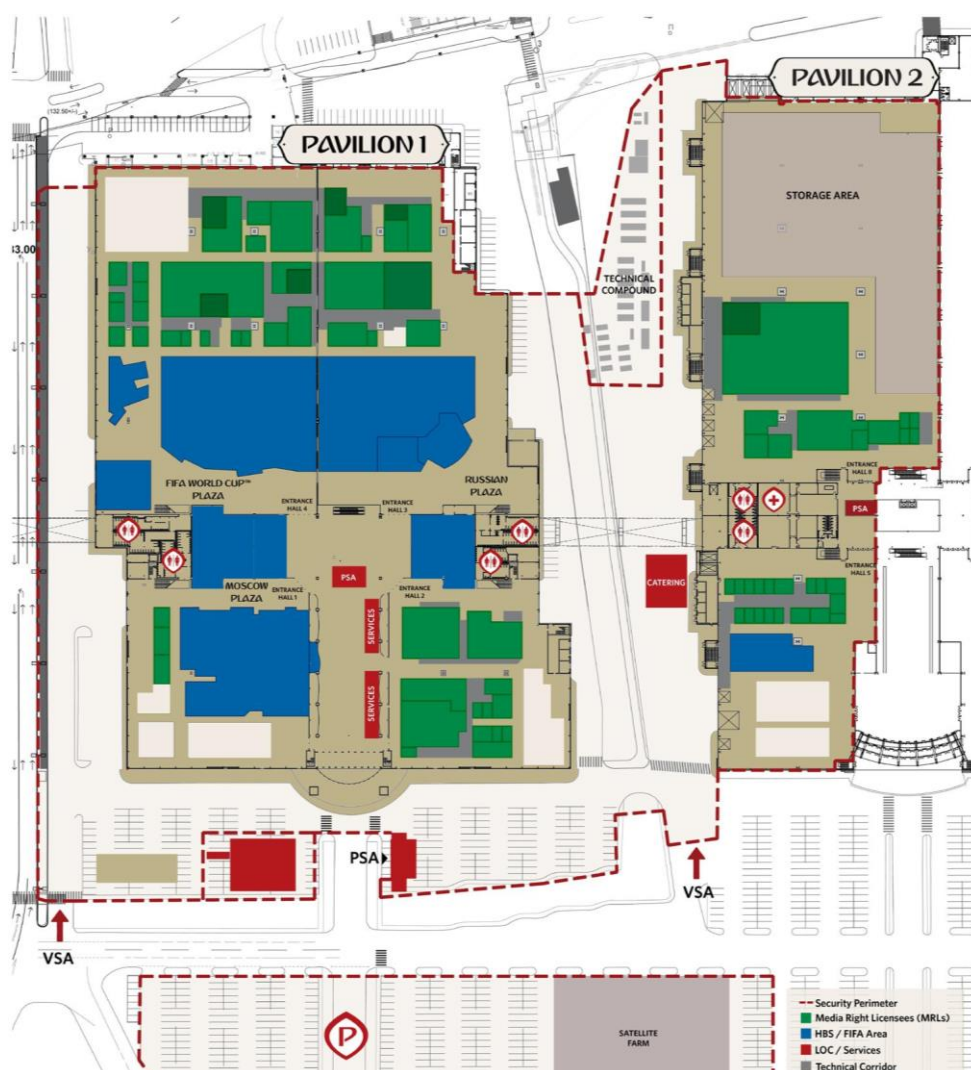


The Crocus Expo International Exhibition Centre



Inside Pavilion 1 of Crocus Expo

## Layout of the IBC



## Technical Compound

The Technical Compound is set up in the technical yard between Pavilions 1 and 2. This central position ensures that temporary electrical and air conditioning supply and back-up installations are as near as possible to the temporary IBC facilities.

## Satellite Farm

The Satellite Farm is located next to the IBC parking lot, a spot which ensures visibility to all required satellites.

## Multilateral areas

The multilateral areas are divided into three main roles: the Master Control Room (MCR)/Central Equipment Room (CER), the Production Centre, and staff offices. These main roles, and their support functions, are located in direct proximity. Although they are built in different halls, they are as close as possible to each other, which helps to strengthen the relationship between the various halls.

For the first time at the FIFA World Cup™, the live Infotainment content will be centrally produced at the IBC. The headline innovation, meanwhile, is the video assistant referee (VAR) operations that will be run from the IBC.

The VAR team supports the referee from a centralised video operation room (VOR) in Moscow. All relevant camera feeds from the 12 stadiums are provided to the VOR through a fibre-optic network and the referee officiating in the stadium talks to the VAR team via a sophisticated fibre-linked radio system. For all the latest information on VAR at the 2018 FIFA World Cup™, please visit [FIFA.com/VAR](http://FIFA.com/VAR).



**Multilateral areas (Pavilion 1)**

- |   |                              |   |   |
|---|------------------------------|---|---|
| A | Master Control Room (MCR)    | G | HBS/FIFA TV Offices   |
| B | Central Equipment Room (CER) | H | FBST Services   |
| C | Construction Help Desk (CHD) | I | BIO/Booking Office  |
| D | Production Centre            | J | Briefing Room<br>(Remote Interpretation Centre in Pavilion 2) |
| E | Innovation Zone              |   |   |
| F | IT Command Centre            |   |   |

## Unilateral areas

The unilateral areas (dedicated areas for individual MRLs) are distributed over the various halls inside Pavilion 1 and 2. A pre-designed areas concept has been implemented. The main objective of this is to offer pre-engineered areas that include all architectural, electrical and air conditioning needs, whilst maintaining the flexibility to match users' individual needs by adding optional electrical and air-conditioning installations.

In addition to the pre-designed areas, a large number of customised premises complete the general plan of the IBC.

## Key dates at the IBC

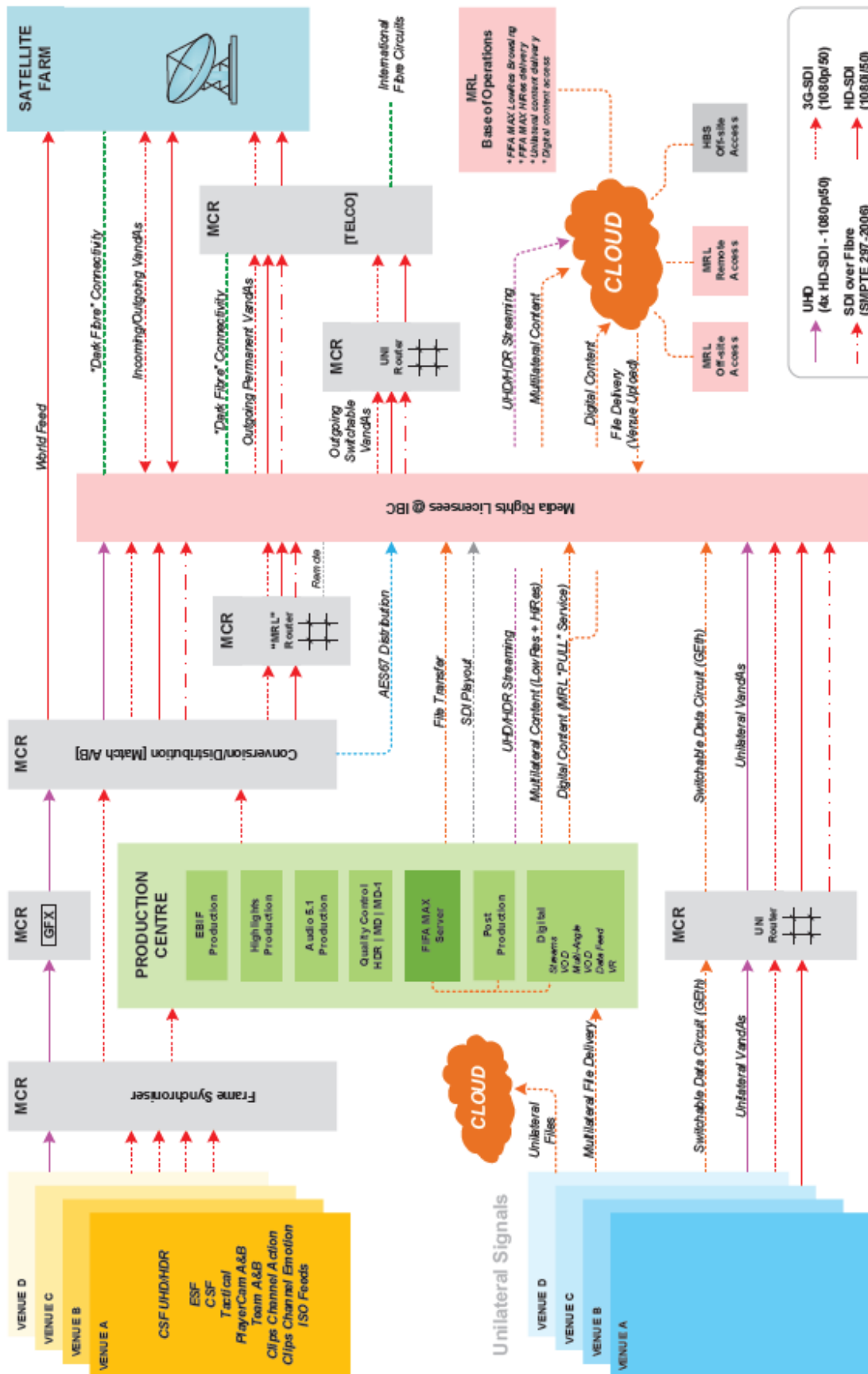
Handover of Crocus Expo (IBC venue)	1 December 2017
IBC opens to first MRLs	Monday, 14 May 2018
Start of IBC operations	Tuesday, 5 June
Opening Match of the 2018 FIFA World Cup™	Thursday, 14 June
Final of the 2018 FIFA World Cup™	Sunday, 15 July
End of IBC operations	Monday, 16 July
Departure of MRLs	Monday, 16 July - Wednesday, 18 July
Hand back of Crocus Expo	Wednesday, 15 August

## IBC facts and figures

54,000m <sup>2</sup>	Raw indoor space	465	AC air handler units
8,613m <sup>2</sup>	Constructed space for multilateral areas	142	BDP electrical boards
9,054m <sup>2</sup>	Constructed space for unilateral areas	156,861m	BDP electrical cable
7	TV studios	3,852	Lighting fixtures
400m <sup>2</sup>	Largest TV studio	1,314	Smoke detectors
1,680m <sup>2</sup>	Largest unilateral area	23,564m	Fire-prevention cable
22m <sup>2</sup>	Smallest unilateral area	203	Sets of fire extinguishers
74	MRLs	133	Total days of construction
4,439m	Primary water hose	30	Total days of dismantling
110	Regulable valves		



Overview of technical facilities at the IBC





## The Master Control Room (MCR)

The MCR is the central distribution point within the IBC for all incoming (from venues and non-venues) and outgoing feeds (to Telco and the Satellite Farm). All incoming feeds through general telecom interfaces (fibre optic or satellite downlink) are monitored and distributed to the MRLs as well as to the Production Centre within the IBC, regardless of the signal format (UHD/HDR, 3G-SDI or HD-SDI).

The MCR also handles the distribution of incoming unilateral VandAs on bookable circuits/time slots to the respective MRLs, or directly to telecom interfaces. Outgoing unilateral feeds from MRLs and multilateral feeds from the Production Centre are monitored and distributed to Telco and the Satellite Farm.

The MCR staff intervene in the event of any issues regarding availability, quality or circuit-timing.

For the first time at the 2018 FIFA World Cup™, all anticipated signal formats, including UHD/HDR, will be monitored within the MCR.

### MCR multiviewer system

For the 2018 FIFA World Cup Russia™, the MCR multiviewer system has been completely overhauled. Each signal on the routing systems – irrespective of the signal format – can be viewed on various monitors, with integrated control over the Virtual Studio Manager (VSM) system.

This solution provides operational staff with an extensive level of flexibility. The multiviewer system is configured and operated by the router control system VSM. Each display on the MCR monitor wall is connected via fibre cables with the dedicated output of the multiviewer processing module.

### Satellite distribution control

Integrated in the MCR, a dedicated World Feed Control facility provides satellite distribution of multilateral match coverage by switching the relevant multilateral feeds from the MCR to the uplink unit based in the Satellite Farm and to the related outgoing fibre. Satellite distribution is monitored 24/7 and MRLs are offered assistance for any related issues.



The set-up of the World Feed Control facility consists of router control panels connected with the central router system. Two dedicated quality control stations allow the operational crew to check the audio and video quality. To monitor the relevant feeds of the satellite distribution, the monitor wall is shared with MCR operations.

### Signal standards

All 64 matches of the 2018 FIFA World Cup Russia™ will be covered in the 1080p/50 format (3G-SDI), as this offers the best signal quality from the camera front-end. With a dedicated UHD Camera 1 and processing/conversion of all other cameras, the host broadcast offers a UHD/HDR version (Enhanced Layer UHD - 2160p50 HDR BT.2020) of the Extended Stadium Feed (ESF).

Within the MCR, all incoming feeds (delivered via Telco interfaces as 3G-SDI) and isolated cameras will be converted to 1080i/50 for further signal distribution to MRLs, allowing for the selection of the standard most appropriate for their operations:

- The signal standard for UHD HDR BT.2020 (2160p50) is HDR, BT.2020, 4 x 2970 Mbps, 1080p/50, SMPTE-424M (Level A) with up to 16 embedded audio channels (as eight AES/EBU stereo channels in Group 1-4, SMPTE-299M). The UHD/HDR signal will be distributed in the two-sample interleave method and the standard for the optical electrical transfer function (OETF) will be S-Log3. Further HDR condensed standards, such as HLG or PQ10 or a SDR 4k REC709 version, will be made available to MRLs at the IBC.
- The signal standard for 3G-SDI SDR Rec. 709 is 2970 Mbps, 1080p/50, SMPTE-424M (Level A) with up to 16 embedded audio channels (as eight AES/EBU stereo channels in Group 1-4, SMPTE-299M).
- The signal standard for HD-SDI SDR Rec. 709 is 1485 Mbps, 1080i/50, SMPTE-292M with up to 16 audio channels (as eight AES/EBU stereo channels in Group 1-4, SMPTE-299M).

## Commentary Switching Centre (CSC)

The CSC controls and switches all national and international commentary and coordination audio circuits. The CSC is located next to the MCR.

In 2018, only the new future-proof IP-based commentary units (CUs) are being deployed. In addition, signal contribution has changed from an SDH-based to an IP-based infrastructure. The entire signal path continues to be redundant via protected WAN connections.

### Analogue audio circuits

Audio 4-wire extensions for commentary and coordination circuits are permanent circuits between MRLs' unilateral area and the CSC, connected to the CSC switching matrix. With this extension, MRLs can access their regular commentary position at venues.

The CSC switching matrix is located within the CER. For audio cabling between the equipment room and the unilateral areas, analogue 10-pair audio cables are used. Both ends are terminated with Krone blocks.

### Audio-Over-IP (AoIP) circuits (AES67/RAVENNA)

In addition to the analogue audio delivery of 4-wire circuits, an IP-based audio delivery adhering to the AES67 standard is also available. This allows for a much more efficient audio distribution both for multilateral and unilateral connections.

Therefore, two different packages are offered:

- Delivery of multilateral audio content via one RJ45/CAT7 connection. This connection includes the Immersive Audio Package, the Radio Package and additional audio streams.
- Delivery of unilateral audio content via one RJ45/CAT7 connection. This connection is used for commentary and coordination 4-wires.

### ISDN and IP turnaround service

MRLs' commentary circuits are turned around at the IBC either through an ISDN or IP transmission to their home country. This service includes the ISDN/IP connection, the ISDN/IP codec and its operation at the CSC and is mainly designed for MRLs with no IBC technical operations.

### GEth interface

This service offers MRLs the flexibility to connect their own transmission devices. These redundant and bidirectional GEth interfaces are delivered from all venues back to the IBC through the Telco contribution network and at the IBC the data circuits are extended further to the MRL areas.