

2014
TECHNOLOGY
exchange

OCTOBER 26-30



INDIANAPOLIS, IN

UHD (8K) Television Coverage of Large Sports Events in Brazil

8K Super Hi-Vision (SHV) and its production in sports events

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NHK

SPARKING NEXT

8K Super Hi-Vision (SHV) and its production in sports events

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- Introduction of 8K SHV Technology
- Public Viewing Event of 2014 FIFA World Cup Brazil™

What is 8K Super Hi-Vision (SHV) ?



- ✓ 8K SHV has been developed as the next-generation television of current HDTV to provide the viewers a superior sensation of reality.
- ✓ Japan aims to conduct trial broadcasting in 2016 and start a broadcast service in 2018.

8K SHV system

- Ultra-high Definition Video - 33 Megapixels
- 22.2 Multichannel Sound

<SHV>

7680 pixels



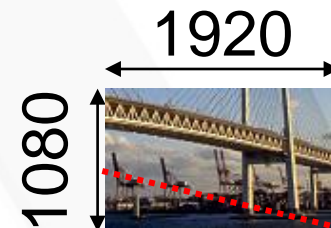
4320 pixels

Height of screen

Viewing distance
(0.75 x Height of screen)

Viewing angle: 100 degrees

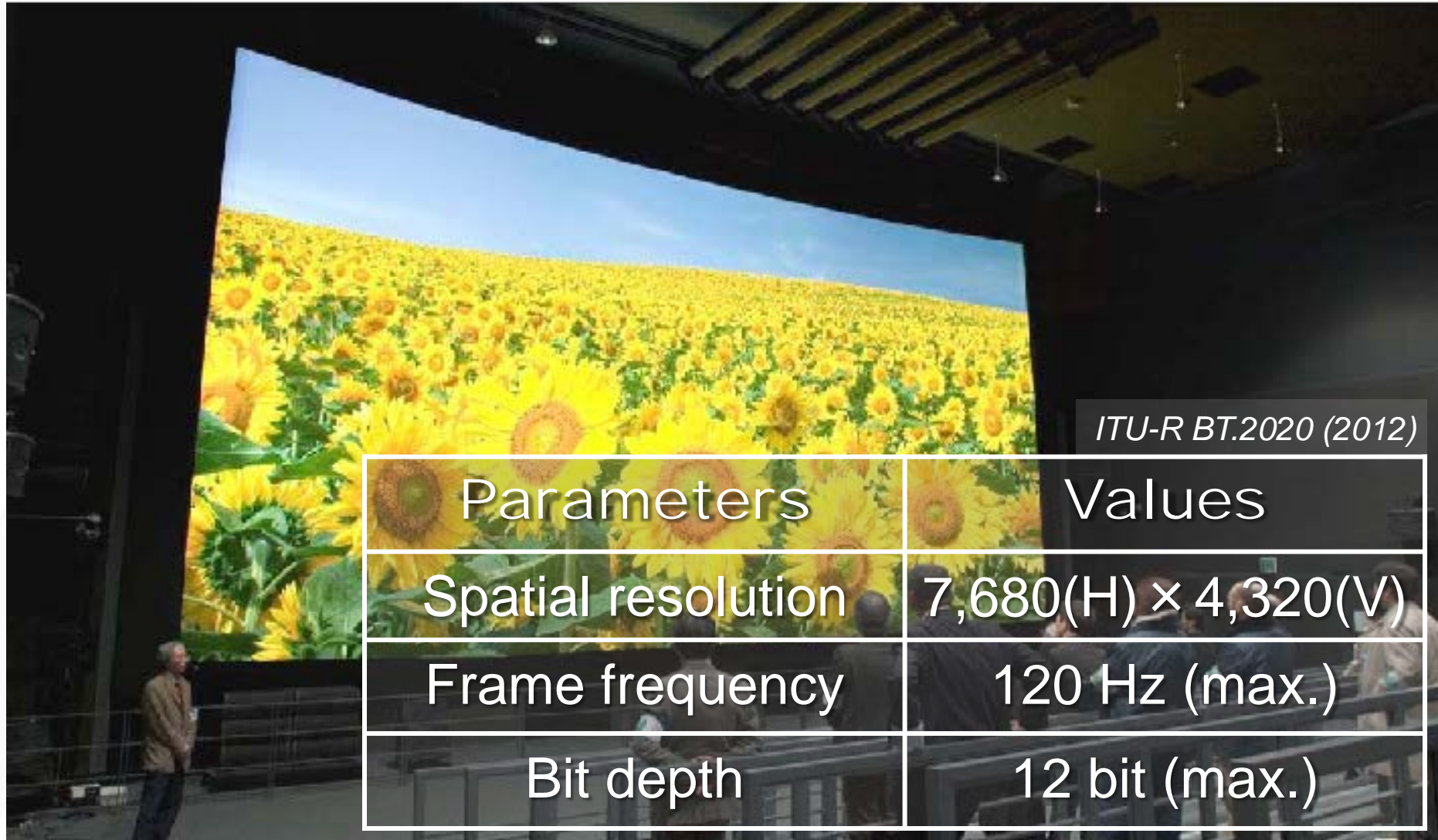
<HDTV>



Viewing distance
(3 x Height of screen,

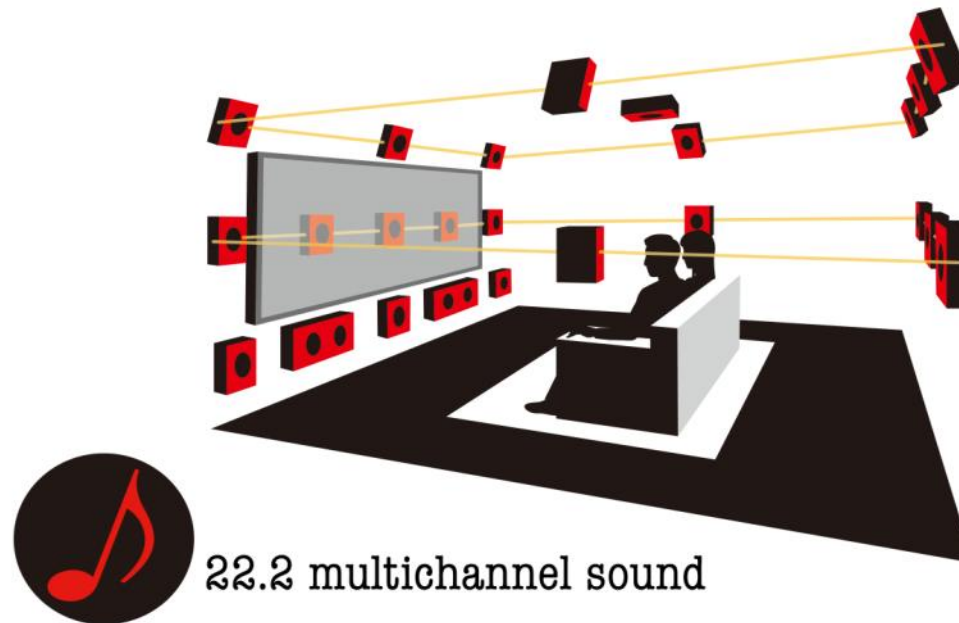
Viewing angle: 30 degrees

Video parameter values of SHV



22.2 multichannel sound system for SHV

24 channels distributed in three layers and its audio channel mapping are standardized in ITU-R Recommendation BS.2051 (2014), and also in SMPTE and ISO/IEC.



Applications of SHV



SHV equipment - Cameras



1st generation camera (2002)
8 M pixel x 4-sensor, 80 kg



3rd generation camera (2010)
8 M pixel x 4-sensor, 20 kg



Full-resolution camera (2010)
33 M pixel x 3-sensor, 65 kg

2012



Portable camera
33 M pixel x 1-sensor
5 kg



**120 Hz 3-chip
full-spec. camera**
33 M pixel × 3-sensor, 60 kg

2013



Cube camera
33 M pixel x 1-sensor
2 kg



High sensitive theatre camera
33 M pixel x 3-sensor
48 kg

SHV equipment - Displays



LCD projector



Wide color-gamut laser projector



85-inch LCD

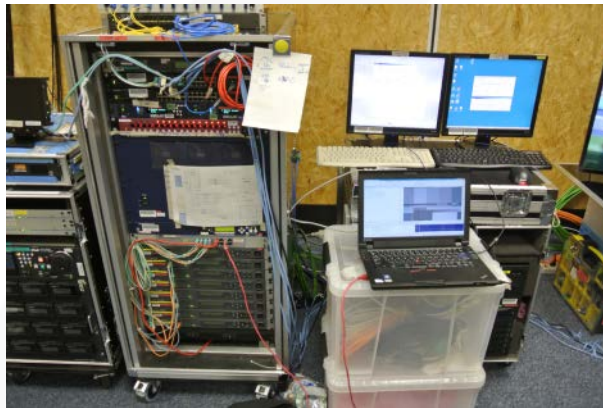


145-inch PDP

SHV equipment - Compression encoder/decoder



AVC/H.264 Encoder



AVC/H.264 Decoder



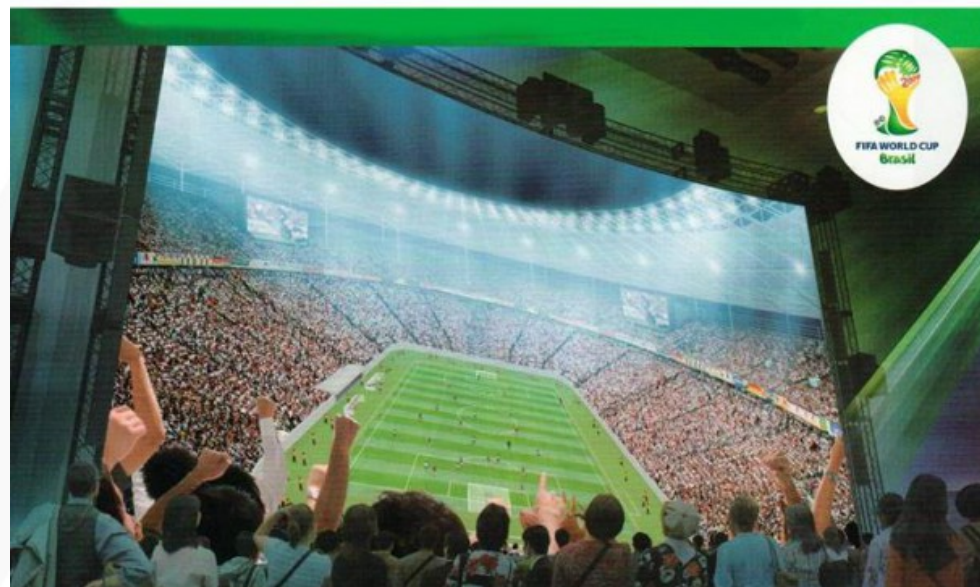
HEVC/H.265 Encoder

Public Viewing Event of 2014 FIFA World Cup Brazil™

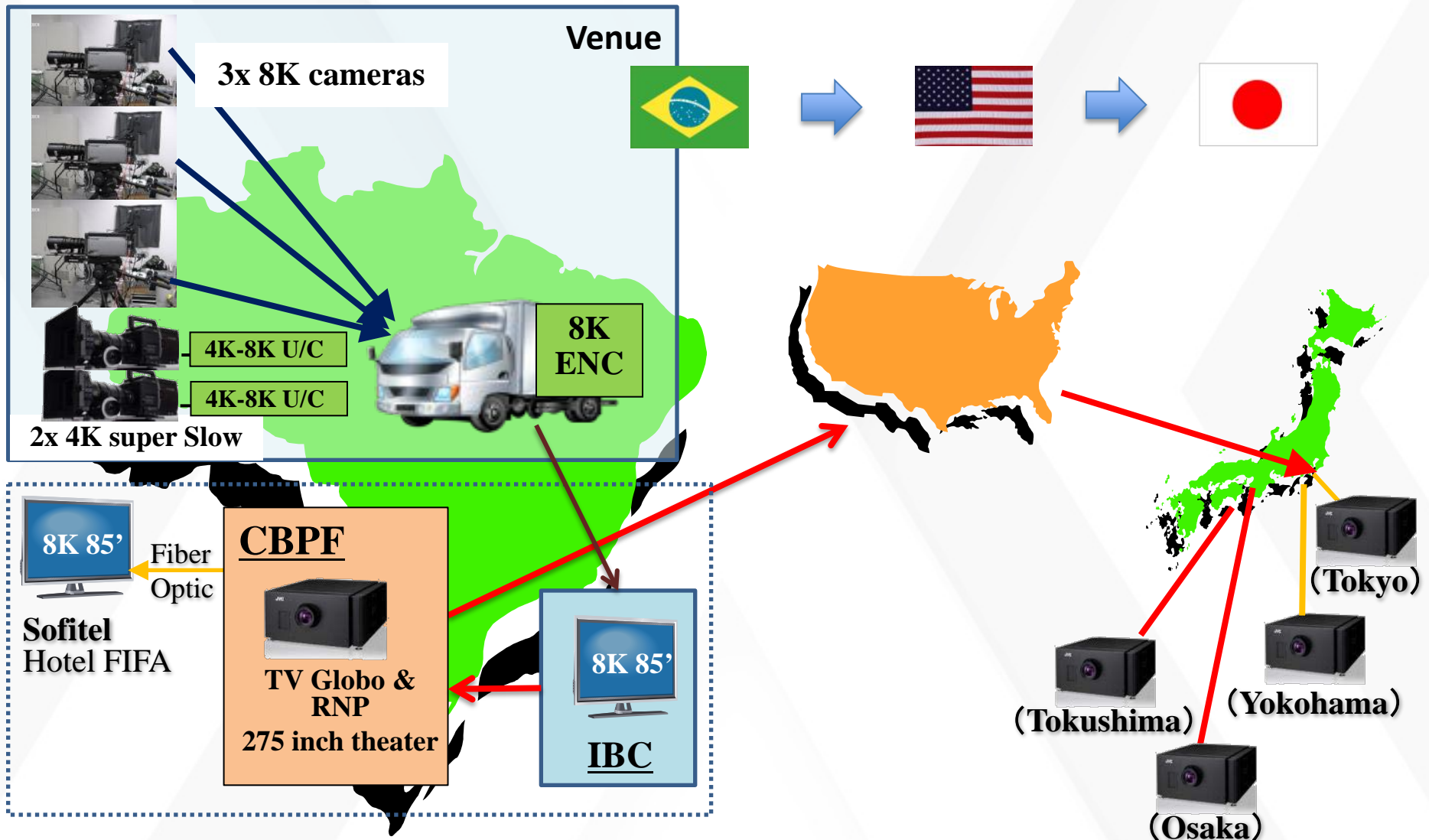


Public Viewing of 2014 FIFA World Cup Brazil™

www.nhk.or.jp/8k/



International transmission route



Shooting schedule of matches

	Group Matches				Round of 16		Quarter-Final	Final	
match	14 June 22:00 CIV vs. JPN	16 June 19:00 GHA vs. USA	19 June 19:00 JPN vs. GRE	23 June 17:00 CMR vs. BRA	28 June 13:00 BRA vs. CHI	30 June 13:00 FRA vs. NGR	5 July 13:00 ARG vs. BEL	8 July 17:00 BRA vs. GER	13 July 16:00 GER vs. ARG
venue	Recife	Natal	Natal	Brasilia	Belo Horizonte	Brasilia	Brasilia	Belo Horizonte	Rio de Janeiro

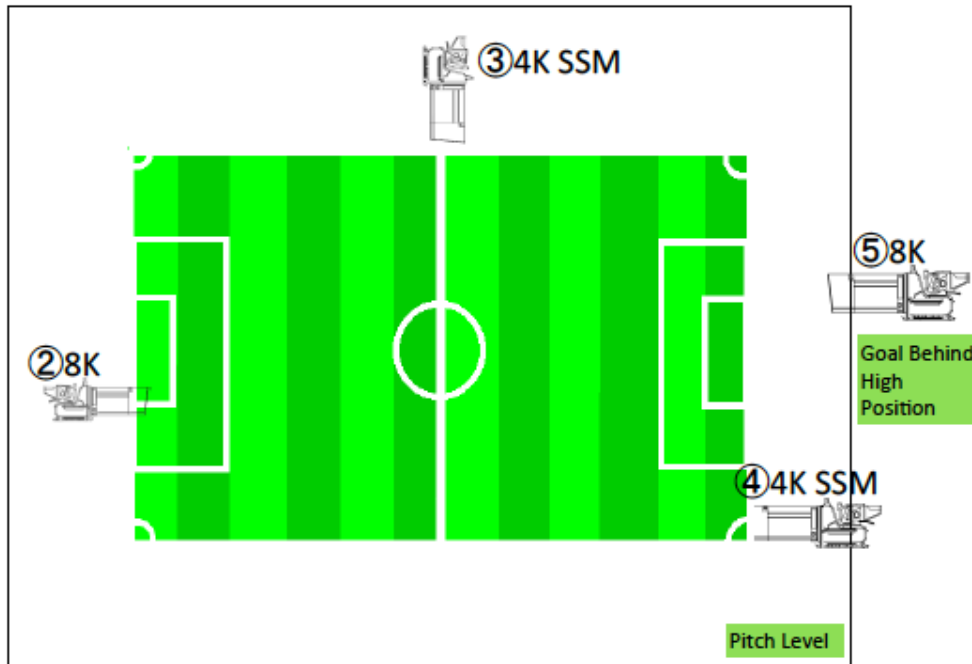
9 matches are shot by 8K in 5 cities.



Transfer route of NHK staff
Total 5,400 km

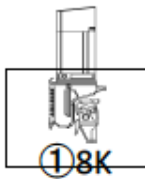
In venue – camera position

Stadium



Main Stand

Main Stand Lower Level



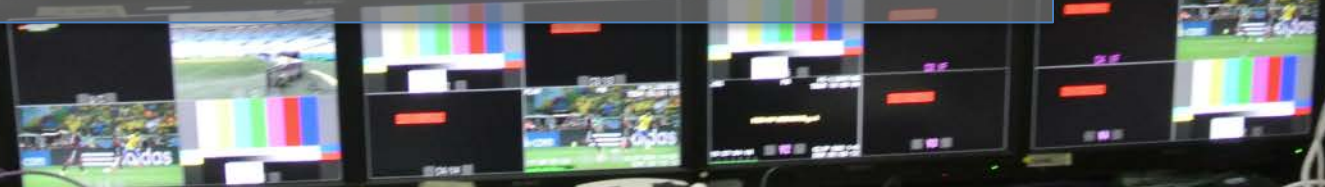
- 3x 8K cameras
 - One in main stand
 - Two in field
- 2x 4K super slow motion cameras
 - In field



Outside broadcast (OB) van

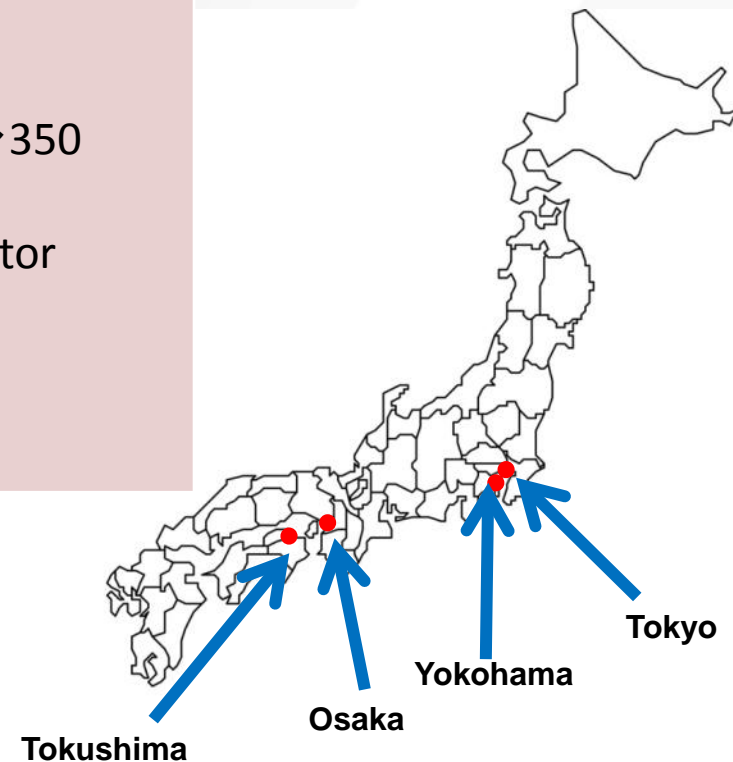


In the OB van



4 PV sites in Japan

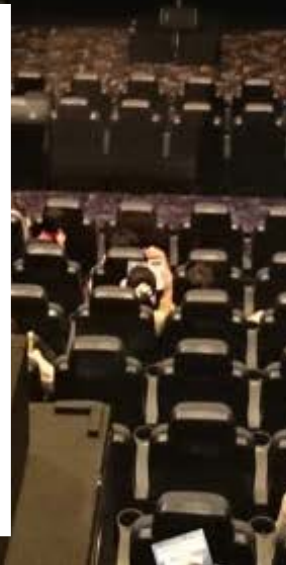
PV site	Date and matches	8K display
AEON cinema Kohoku new town, Yokohama	14 June ~ 14 July 9 matches	300 ~ 350 inch Projector
The Toyosu campus, Shibaura institute of technology, Tokyo	15 June ~ 20 June 3 matches	
Grand Front Osaka, Osaka	15 June ~ 20 June 3 matches	
ASTY Tokushima, Tokushima	14 June ~ 20 June 3 matches	



Yokohama site



AEON Cinema Theater No.4
350 inch screen
130 seats



Tokyo site

Auditorium of Shibaura Institute of
Technology - Toyosu Campus

330 inch screen
113 seats



Osaka site

Osaka Knowledge Capital

350 inch screen

154 seats



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Tokushima site

Auditorium in “Attractive Space in Tokushima Yamashiro”

300 inch screen
81 seats



PV Record

Site	Audience In Total	Detail (the number of audience and times)			
		Live viewing		Recording-Playback	
Yokohama	3385	890	9	2495	74
Tokyo	1775	411	3	1364	17
Osaka	2656	385	3	2271	16
Tokushima	1206	232	3	974	31
Total	9022	1918		7104	

- Over 9000 people had watched soccer games on PV
- They came to the PV sites overnight
 - Time difference between Brazil and Japan is 12 hours !
- They felt realistic sensation as if they were in the stadium, and immersive sensation

Conclusion

- Toward future 8K broadcasting
 - We are now preparing for the trial broadcasting of 8K SHV in 2016 and the launch of broadcasting service in 2018.
- Public viewing of 2014 FIFA World Cup Brazil™
 - The public viewing was successful providing the viewers a sense of reality and immersive sensation.

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