What Is the HK Rugby 7s?

• HK’s Largest International Sporting event
• 28 International Teams
• Since 1976
• 3 Day event
Project Overview

Background

• PCCW Now TV has the rights for HK 7s in HK
• PCCW Global had already experimented VR long haul transmission with Harmonic
• PCCW has decided 6 weeks before the event to launch a Live VR service with HK 7s

Process

• Harmonic provided some consulting on how to deploy a VR 360 video service
• Harmonic and Nokia were already integrated
• Nokia provided an E/E solution (besides encoding/packaging)
• Ideal systems, reseller for both Harmonic and Nokia OZO in HK, was a natural choice

Result

• First Live 3D VR service in Asia
• Service deployed in less than 6 weeks
• Target platforms: HMDs, web browser, YouTube, Facebook
• PCCW management satisfied by the result
• Good press coverage at the show and after the show
Overview Project Flow from source to screen

Event Organisers

Host Broadcasters

VR Integration Partner

Stadium

360 Capture (Nokia OZO format)

OZO Live server (Decoding and Stitching to UHD)

Head End

Fiber to the Stadium

HK VR Viewer

UHD Compression

CDN

HK VR Viewer

360 Capture (Nokia OZO format)

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360 Capture (Nokia OZO format)

OZO Live server (Decoding and Stitching to UHD)

Nokia OZO format

NOW TV

IDEAL

PCCW Global

Head End

Live production

Harmonic

PCCW Global

HKT Here to Serve

PCCW Group member
### Bandwidth Delivery & Viewable Platforms

<table>
<thead>
<tr>
<th>Profile</th>
<th>Image Resolution</th>
<th>Frames per second</th>
<th>Video Bitrate</th>
<th>Protocol</th>
<th>Viewing Platform</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>UHD (3840 x 2160)</td>
<td>30fps</td>
<td>25 Mb/s</td>
<td>HEVC/DASH</td>
<td>HTC Vive, Oculus Rift, Samsung Gear VR</td>
</tr>
<tr>
<td>2</td>
<td>1920 x 1080p</td>
<td>30fps</td>
<td>6 Mb/s</td>
<td>AVC/HLS</td>
<td>Youtube, NowTV web platform, Google Cardboard</td>
</tr>
<tr>
<td>3</td>
<td>1280 x 720p</td>
<td>30fps</td>
<td>4 Mb/s</td>
<td>AVC/HLS</td>
<td>Youtube, NowTV web platform, Google Cardboard</td>
</tr>
</tbody>
</table>
Content + Technology:
Broadcast Magazine Asia – Front Cover

Social Media buzz:
Nokia Technologies

Newspaper Coverage:
Singapore Today Paper

Others:
Oculus CEO personally fast track approved our app on the Oculus Store
Case Study: Delivering An Immersive 360-Degree, VR Sports Experience

Moderator: Thierry Fautier, VP, Video Strategy – Harmonic

Panelists:
- Devon Copley, Head of Product, VR Platform/Ozo - Nokia Technologies
- Margareta Sauger, VP, Americas - PCCW Global