

Singapore Sports Institute Uses Analytics for SEA Games

Established in 2011, the Singapore Sports Institute (SSI) is a specialist institute for sports science, medicine, and technology with the aim of becoming a world-class sports institute to transform sporting talent into champions. In August 2014, SSI created the High Performance Sports (HPS) Analytics, Technology, and Education Department with the objective of leveraging analytics for sporting excellence in Singapore. The department provides video and data analysis of Team Singapore athletes' performance during both practice and competitions, and it aims to educate the Singapore National Sports Associations (NSAs) on how to use the technology in sports.

During training and competitions, athletes' activities are captured using the Dartfish video platform and then analyzed at the SSI based on input from coaches and NSAs. The analysis is conducted using specialized software called SimulCam and StroMotion to compare an athlete's performance with others or to pinpoint deficiencies and shortcomings via the process of tagging. Tagging is a way to identify and categorize sports activities that impact performance. Activities are categorized in four ways: creation, such as kick, tackle, or turnover; categorization, covering offense or defense, team or individual play; identification of the specific players involved; and description, which includes the place where the shot was taken, the outcome, etc. The tagging files and video analysis are uploaded on a secure cloud platform to be shared with athletes and coaches. Coaches can also download the videos and discuss specific portions of the game with their athletes by using the relevant tags rather than watching the whole game. Similarly, athletes can watch the videos to better prepare themselves for practice or actual competitions.

The HPS Analytics Team used this system in 2015 during the 28th Southeast Asian (SEA) Games, which were held in Singapore. The department's key objectives were to build a video management system and a video repository of Singapore athletes as well as other top athletes from the region. Through the video management system, the department aimed to integrate and streamline the processes of capturing video footage of athletes, analyzing the videos, and

finally sharing the analysis with coaches, athletes, and other stakeholders.

Before the games started, the team created a "Pre-Games Report" with an analysis of Team Singapore's chances of winning medals in different sports; it even made an analysis of individual athletes based on their performance relative to their competitors over a 12-month period. The HPS Analytics team also worked closely with Team Singapore athletes and coaches to develop tagging templates that were then used to analyze the videos. The videos were collected via the broadcast feed, analyzed, and then uploaded online in as short a period as possible. For example, as soon as an athlete's event was over, the video would be processed and uploaded to an online video platform that only coaches and athletes could access, via web browser or Dartfish's mobile app. In total, the team processed 1,297 videos with 745 hours of footage covering 19 different sports. These videos became part of the video database, and to enable an efficient retrieval of videos, each video was marked with relevant keywords and metadata.

In addition to the video analysis, the HPS team also produced daily reports of Team Singapore's performance and sent them to key stakeholders and senior management. The team also provided hourly information on Team Singapore's results as well as the medal count. These details were also updated in Qlik, an online business intelligence and data visualization platform. End-of-the-day reports showed Team Singapore's performance against their targets as well as a comparison with historical results. For example, for the women's discus throw, officials could not only monitor the distance thrown but also the athlete's rankings over the years and comparisons with regional discus throwers. In addition, the reports allowed the officials to drill down to key information related to individual athletes, such as the level of support provided and whether the athlete was new or experienced.

Analytics made a huge impact on the success of Team Singapore, which received 84 gold, 73 silver, and 102 bronze medals, placing Singapore second behind Thailand. In addition, HPS received

numerous accolades, especially from NSAs, who experienced first-hand the power of analytics and thus became more amenable to working with HPS to implement their own video management and analytics systems.

Sources: Channel NewsAsia. "SEA Games: Team Singapore Breaks Records in Best Performance Yet," Channel NewsAsia, June 16, 2015, www.channelnewsasia.com, accessed December 22, 2016; S.

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