FROM LECTURE HALLS TO VIRTUAL TEACHING

HOW TRACKINGMASTER AND CANON PTZ CAMERAS ARE REVOLUTIONIZING HYBRID EDUCATION AT THGA BOCHUM

Customer
Technical University
Georg Agricola (THGA)

Sector
University

Year founded
1816

Location
Bochum, Germany

Scope of Activities
On-site and hybrid
teaching events

Website
www.thga.de

Acquired Products
CR-N300 and Autotracking
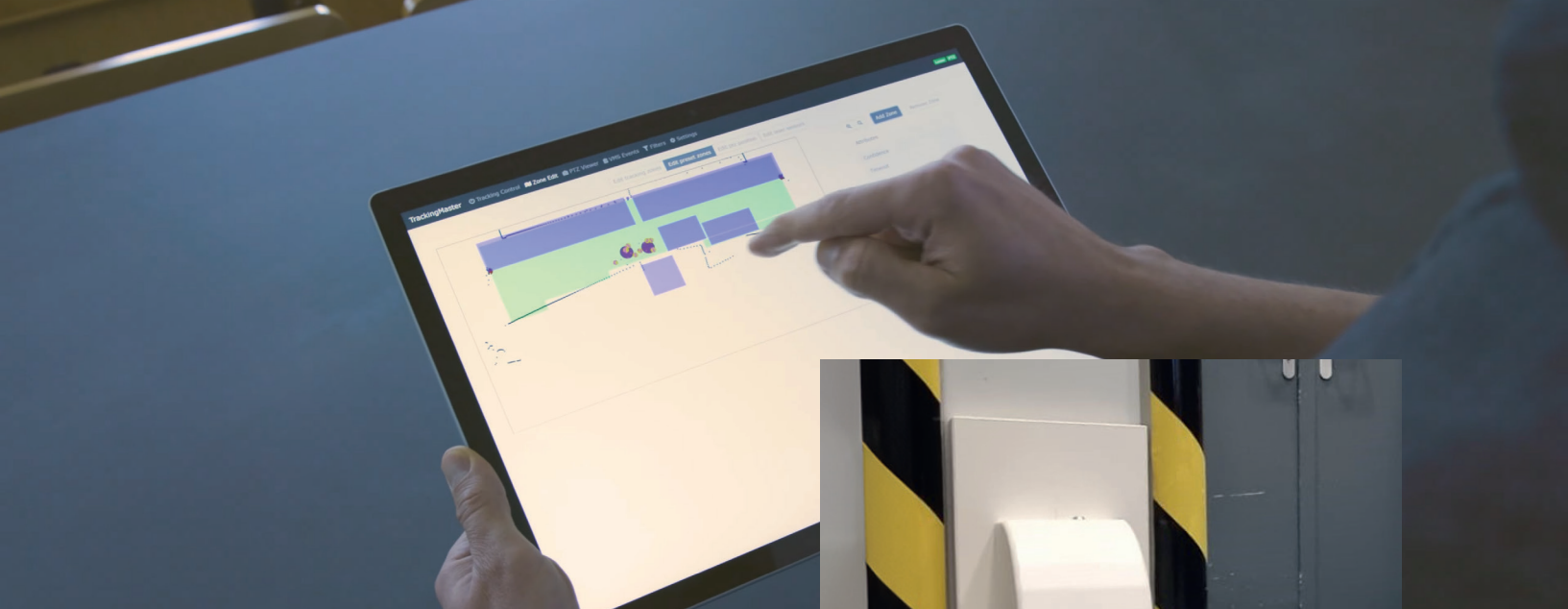Solution from TrackingMaster

Partner in Implementation
Bimagotec

That hybrid as well as 100% online teaching formats are becoming increasingly commonplace in everyday life is now clear – however, there is still no general standard in their implementation. The THGA Bochum has also decided to give this area a new look.

The Challenge

- Recording and Streaming of Lectures: The solution should enable efficient recording and seamless transmission of lectures for participants outside the university campus. Academic administrators expect maximum automation in recording and broadcasting educational sessions.

- Providing a Reliable, Flexible, and User-Friendly Solution: The challenge was to develop a technological solution that is not only reliable and flexible but also easy to use.

- High-Quality Experience for Students on Various Devices: Requirements included ensuring high-quality audiovisual experiences that facilitate optimal learning across different devices.

- Ensuring Teaching Quality and Data Protection through Automated Media Technology: In addition to technical performance, it was crucial to ensure that the media technology solution supports teaching quality and adheres to the highest standards of data protection.

The successful overcoming of these challenges was aimed at ensuring that the university can provide its students with an effective learning environment that meets the demands of today's educational landscape.

The Solution

THGA sought an effective solution for its event spaces and turned to the system integrator Bimagotec. Bimagotec presented various options, including the combination of Canon and TrackingMaster. After thorough testing of different solutions, THGA decided to integrate the Canon CR-N300 PTZ camera along with the Autotracking Solution from TrackingMaster.

The choice of Canon cameras was based on their outstanding quality, silent operation, and impressive zoom and autofocus capabilities. This solution allows for the production of studio-quality content without the need for additional personnel, such as a camera operator. Despite the automation, the camera control is so precise that it mimics human operation.

Another advantage was the seamless compatibility of Canon cameras with TrackingMaster. TrackingMaster enables the automated control of PTZ cameras and media technology through the use of 2D laser scanners for real-time detection of people's positions. Tim Schwartz, Master of Event Technology at Bimagotec, explains, „As integrators, we choose the appropriate technology depending on the situation, or combine them if necessary. For lecture halls, TrackingMaster's IR laser scanners are perfect, as there is often a risk of ambient noise, and the monitored area is well-defined. Canon cameras stand out due to their easy control and perfect image quality."

Especially in lecture halls without professional lighting, a wide dynamic range is necessary. The CR-N300 ensures that lecturers and students are not distracted by disruptive elements. Tim Schwartz emphasizes, „We have

been using the Canon PTZ cameras CR-N300 and CR-N500 since their introduction. The image quality is unmatched, and the handling is excellent. The cameras also fulfill a frequently requested feature – they are available in black and white."

This combination proved to be an ideal solution for hybrid educational spaces. Another critical factor for THGA was compliance with data protection requirements. The interfaces between the video management system and other systems should be secure and privacy-compliant. The selected solution meets these stringent requirements while also providing the flexibility to customize it for various events.

Watch the case study video here!

The Result

The successful collaboration between Canon and TrackingMaster has elevated hybrid teaching events at THGA to a new level of quality. The university is now optimally prepared for the future of learning, thanks to top-notch technology and data protection solutions. The positive experiences with the Canon PTZ camera and TrackingMaster technology have prompted the university to firmly establish these technologies in its future teaching activities. The user-friendly nature allows instructors to operate the equipment themselves, facilitating the delivery of educational content at the highest level. Both part-time and full-time students benefit from this technology, which enables an enriched learning environment.

This combination of Canon PTZ cameras and TrackingMaster proved to be an ideal solution for hybrid educational spaces.

We are flexible and are also happy to collaborate with other auto-tracking systems to ensure that the individual requirements of educational institutions are met.

The Solution

CR-N300 PTZ Kamera
- 1/2.3-inch CMOS sensor
- 4K UHD image quality
- 20x optical zoom with image stabilizer
- Hybrid autofocus
- Various integrated protocols such as RTMP and NDI|HX
- HDMI, SDI, IP, and USB-C connectivity

TrackingMaster
- Autonomous person tracking
- Detection range: 10 m width, 5 m depth (expandable)
- Sensor type: LIDAR laser sensors (2, expandable)
- Sensor scanning height: 30-60 cm, Laser class 1 according to DIN EN 60825-1
- Power supply: POE (Power over Ethernet)
- Trackable persons: One to several
- User interface: Web browser-based, configuration options for sensors, cameras, zone definition, and API integration with an external system (Opencast).

Canon

Tracking **Master**
Automated person tracking

Interview with Professor Nicole Lefort and Project Manager Martin Smaxwil.

Was there training for the new PTZ camera transmission and tracking technology, and how extensive was it?

The THGA E-Learning Coordination Office provided both online information and offered individual on-site training. The duration varied, depending on the agreement, covering the entire media technology, including tracking, camera control, and transmission and recording capabilities. On-site training and video tutorials from the E-Learning Blog proved particularly helpful for preparation. For issues during usage, on-site instructions for help are accessible via the system's touch screen. Queries are promptly addressed by the E-Learning Coordinator.

Will the lectures be exclusively streamed, or will they also be recorded and archived for later access by students?

Instructors have the option to broadcast the sessions both live (via the Zoom video conferencing system or the Panopto video management system) and record them (also via Panopto). Both systems are directly linked to the Moodle Learning Management System through interfaces. This ensures that the recordings or links to the transmissions are directly available in the instructor's associated online courses.

What are the data protection requirements for hybrid-transmitted lectures?

The establishment of transmission and recording capabilities was carried out in close coordination with the external data protection officer of the university's supporting organization. The operation and use of the Zoom video conferencing system, the Panopto video management system, and the Moodle learning platform have also been privacy-reviewed by the data protection officer. Camera areas are selected to allow students to enter or leave the room without entering the recording area. Upon entering the room, appropriate signs indicate the recording or transmission possibility and the rights of individuals. The implicit consent to data processing upon entering the room is accompanied by the right to revoke this consent. Rights of individuals and contact persons are also posted at all entrances to the room. In the room itself, highly visible optical indicators (illuminated signs) show whether the camera is currently activated.

How satisfied are you with the camera settings for transmission/recording?

The manual and automatic control of the camera is reliable. Whiteboard content is also recorded and transmitted legibly. The selectable presets for specific camera positions are particularly useful for this purpose. Switching between presets and auto-tracking of the camera is straightforward. During the transmission or recording of a lecture, the technology operates discreetly in the background, allowing a focus on teaching and students. The short transmission times enable seamless communication with online participating students.

Is there anything else you would like to add to share your experiences with the new technology?

From the students' perspective, there has been very positive feedback from the initial experiments with hybrid technology. The usable visualizer transmits handwritten documentation, digital images (e.g., from tablets), as well as exhibits or demonstration materials in very good quality. Particularly, the zoom function and focus settings facilitate the display of exhibits of various forms and sizes.