**biamp.**

# Powerful Technology For A Prominent University

## Tesira® Supports Modern Education Techniques at the Technical University of Berlin

**W**ith a history dating back to 1770, the University of Technology Berlin (Technische Universität Berlin, also referred to as TU Berlin) has been one of the most respected educational institutions in Europe since its inception, and has produced hundreds of prominent scientists and researchers. To keep pace with students' expectations and remain on the cutting edge of modern education, TU Berlin sought to refurbish two of its auditoriums with upgraded AV systems. With classrooms and other university buildings located throughout the city, TU Berlin needed a solution that could work well across a relatively wide geographical area.



## SUMMARY

**Location**
Technical University of Berlin
Berlin, Germany

**Facility Scope**
Together, Rooms 104 and 105 can accommodate approximately 1800 students. The rooms can also be combined into a single space when needed.

**Consultants**
Macom and MMT Network

**Biamp Product Family**
Tesira® and Audia®

**Objectives**
Refurbish existing classrooms to support modern pedagogical practices and meet students' evolving expectations, while maintaining portions of the original AV system whenever possible. Provide support for combining the two spaces or streaming content from one room to the other when needed.

**Solution**
TesiraLUX™ with AVB/TSN.

**Outcome**
With a Tesira solution in place, the system allowed TU Berlin staff to use AVB/TSN to its full advantage while meeting the university's changing needs and supporting flexible room configurations. Tesira's efficiency and status as a single-platform solution allowed the installation to be completed during the summer break period, with no disruption to class schedules.

# THE CHALLENGE

**T**U Berlin's primary AV decision-maker was seeking a cost-effective solution that wouldn't compromise system quality. Macom and MMT Network, the consultants responsible for designing the solution for the different rooms, initially suggested an HDBaseT solution. However, the university changed the scope of the installation slightly by requesting that the two rooms being refurbished have the ability to be combined to accommodate larger audiences during special occasions such as welcome messages on the first day of school each year. In addition to the ability to combine rooms 104 and 105, the university required overflow capabilities that would allow events from one room to be broadcast to the other if demand exceeded seating capacity. To accommodate these requests, the installation required a more flexible solution.

Originally refurbished in 2005, Room 105 was in need of a considerable upgrade in order to meet students' needs. To maximize funding and reduce waste, university staff wanted an updated AV solution that allowed them to maintain portions of the original system, which was based on Biamp AudiaFLEX devices and used CobraNet® for audio and video distribution via DVI and RGBHV connectors. TU Berlin was seeking an IP-based AV solution that could accommodate this expansion.

Room 104 became the first education auditorium in the world to run both the audio and video systems on the same network. To accomplish this, the room needed to take advantage of the capabilities provided by audio video bridging (AVB) technology, which includes provisions for bandwidth reservation, precise time synchronization, and much more.
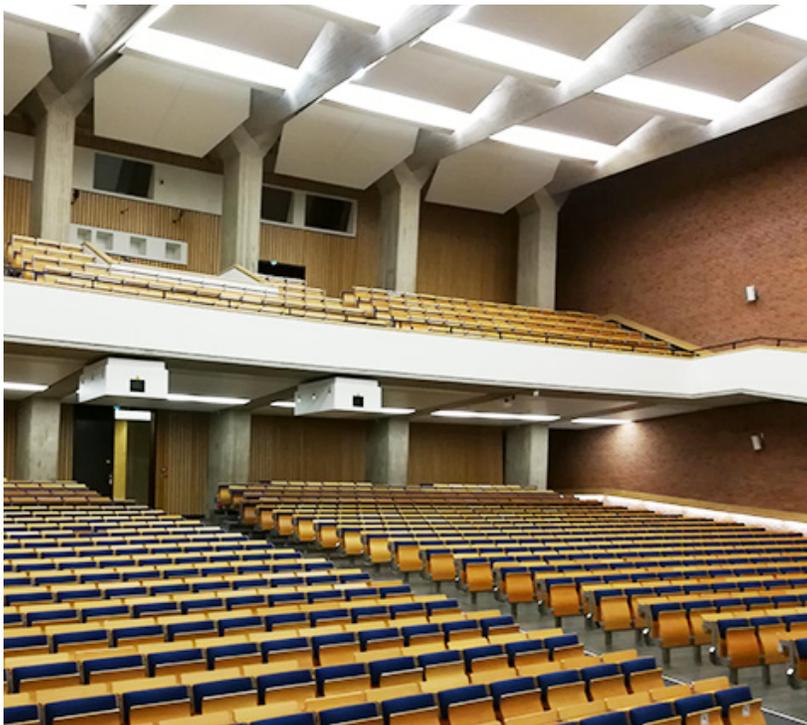
# THE SOLUTION

**B**ecause TU Berlin officials value quality and strive for excellence, they prioritized achieving the lowest possible latency and the lowest compression rates possible. To achieve its goals, the university selected a Tesira solution from Biamp Systems. The installation includes a total of 26 TesiraLUX™ encoders and 18 decoders. These are connected to the lecture desk, front of house, stage, and control room, as well as to four adjacent interpreter rooms. In addition, both rooms have connections to the Lichthof central meeting point, situated 100 meters from the primary space. All devices on the network are connected using multimode 10G fiber, and two different technical rooms provide support for the different signals. The ZGR-M technical room manages media engineering devices via an Extreme Networks® switch, while the Wiring Center uses Cisco® switches for control.

Both rooms have Wacom® Pen Displays allowing professors to use an interactive chalkboard to draw out lessons in real time. These displays also double as preview monitors. TesiraLUX provides the low latency required for students to view the words and diagrams created by their professors nearly instantaneously. Low latency was a mission critical element of this installation to ensure that the information being shared by professors was visible to students without delay or distraction.

As part of the mission to maintain elements of the original system, a new wiring structure needed to be built between the rooms and other related locations that included multimode fiber, as well as Ethernet connections to the Wiring Center. This new wiring configuration connects multiple floors to the AV system, supporting future expansion as the university constructs or refurbishes additional buildings.

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## TU BERLIN IS EXTREMELY HAPPY WITH THE TESIRA SOLUTION BY BIAMP, AND LOOK FORWARD TO EXPANDING THE SYSTEM TO INCLUDE ADDITIONAL BUILDINGS.

*— Bernhard Müller*
AV Consultant/Project Engineer
MMT Network GmbH

# EQUIPMENT LIST

## Room 104:

**(11)**  TesiraLUX IDH-1

**(06)**  TesiraLUX OH-1

**(01)**  Tesira SERVER-IO AVB with Dante™

**(02)**  Tesira EX-MOD

## Room 105:

**(15)**  TesiraLUX IDH-1

**(12)**  TesiraLUX OH-1

**(01)**  AudiaFLEX CM 12x8

**(01)**  AudiaFLEX CM 24x0

**(01)**  AudiaFLEX CM 0x24

**(01)**  Tesira SERVER-IO AVB with Dante

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## THE NEW TESIRA AVB SYSTEM HAS BEEN STABLE EVERY DAY SINCE WE WENT LIVE. WE HAVE NEVER HAD SUCH A SUPERIOR AV EXPERIENCE BEFORE!

*– Christoph Moldrzyk*
Data & Media Technology Manager
Technology University of Berlin

# CONCLUSION

**T**he final installation was built on a converged AV network, with both the audio and video systems on the same network. This allows TU Berlin staff to take full advantage of the myriad benefits of AVB. While the installation encountered some challenges related to its tight timeline—requiring the project to be fully completed by the end of the university's summer break period—the Tesira platform provided the power and flexibility necessary to meet the installation's goals. University administrators were extremely pleased with the end result, and staff members are currently completing the Biamp certification process to fully understand the AV solution and operate it from the control room. TU Berlin administrators are already planning to add a second phase to the installation, expanding to other university-owned buildings throughout the city of Berlin.



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## HAVING AUDIO AND VIDEO ON A SINGLE NETWORK IS THE BEST PART OF THIS INSTALLATION. BECAUSE IT IS A TRULY CONVERGED AV NETWORK, TU BERLIN'S PROFESSORS ARE ABLE TO KEEP UP WITH STUDENTS' RAPIDLY EVOLVING EDUCATIONAL EXPECTATIONS.

*— Sebastian Mensing*
AV Consultant/Project Engineer
macom GmbH

# ABOUT BIAMP SYSTEMS

**B**iamp Systems, LLC is a leading provider of innovative, networked media systems that power the world's most sophisticated audio/video installations. The company is recognized worldwide for delivering high-quality products and backing each one with a commitment to exceptional customer service.

Biamp is dedicated to creating products that drive the evolution of communication through sight and sound. The award-winning Biamp product suite includes: Tesira® media system for digital audio and video networking, Devio® collaboration tool for modern workplaces, Audia® digital audio platform, Nexia® digital signal processors, and Vocia® networked public address and voice evacuation system. Each has its own specific feature set that can be customized and integrated in a wide range of applications, including corporate boardrooms, conference centers, huddle rooms, performing arts venues, courtrooms, hospitals, transportation hubs, campuses and multi-building facilities.

Founded in 1976, Biamp is headquartered in Beaverton, Oregon, USA, with additional engineering operations in Brisbane, Australia and Rochester, New York. For more information on Biamp, please visit www.biamp.com.