Collaborative learning solutions for higher education

BARCO

Visibly yours

A lean-forward experience

Collaborative learning is about providing an active, engaging experience for everyone in the classroom. Barco Collaborative Learning supports both teachers and students by providing interactivity tools and simplifying information exchange. Students and teachers can bring any personal device (BYOD) into the room and connect to the system via the campus WiFi. The connectivity, information exchange and interactivity options allow educational institutions to evolve from a teacher-centric to a student-centric experience and make education more effective.

tablet

smartphone

pc

students

teachers
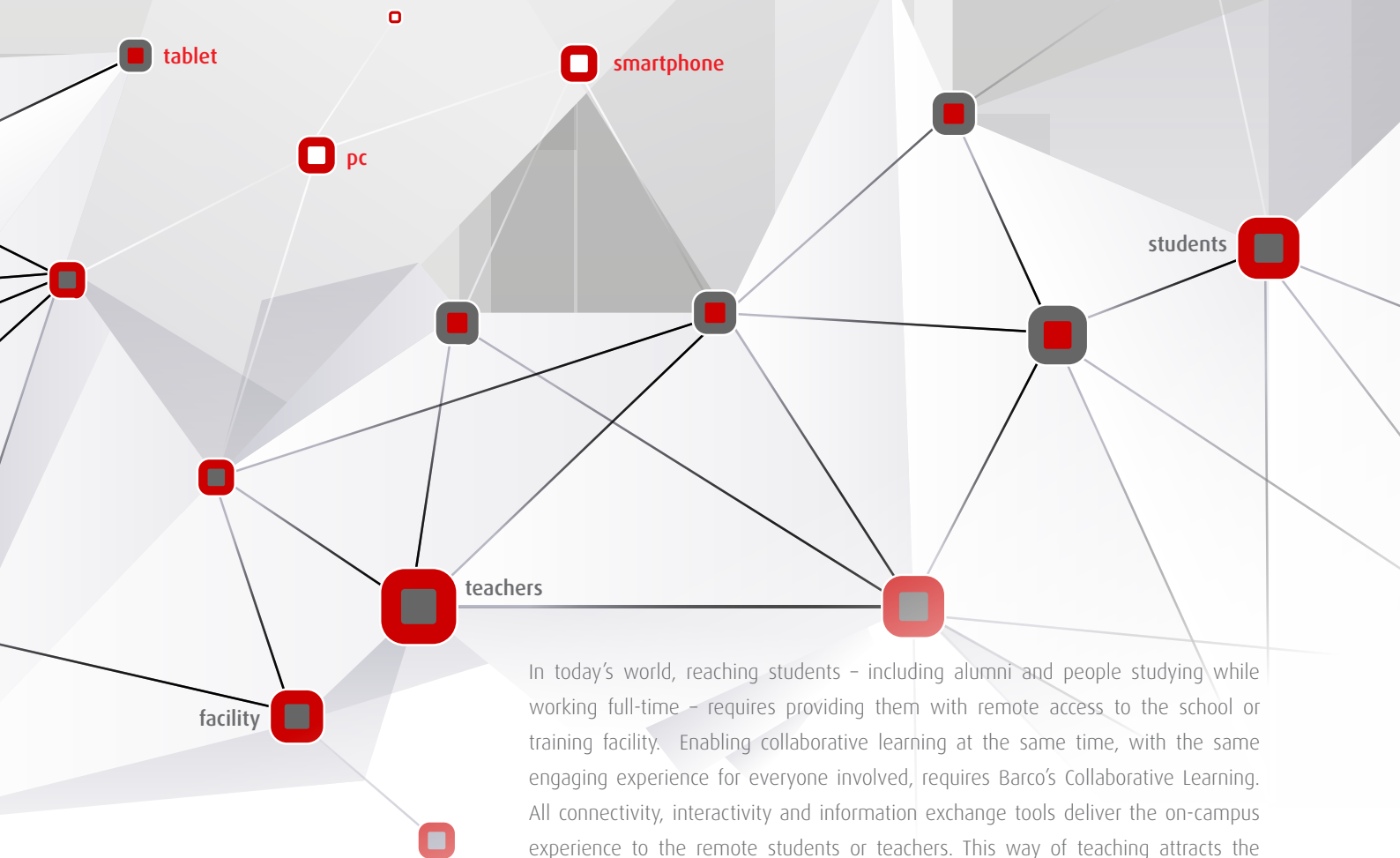
facility

In today's world, reaching students – including alumni and people studying while working full-time – requires providing them with remote access to the school or training facility. Enabling collaborative learning at the same time, with the same engaging experience for everyone involved, requires Barco's Collaborative Learning. All connectivity, interactivity and information exchange tools deliver the on-campus experience to the remote students or teachers. This way of teaching attracts the generations of students who have grown up with mobile technology, while the teachers receive a new set of tools with which to create their preferred teaching methods.

Ease of use is a cornerstone of the solution. Teachers want to focus on teaching, not on using the technology. The Barco Collaborative Learning solution provides technology support for learning and teaching with the lowest learning curve for teachers and students alike. The teacher's user interface is an example of making a lecture in an active learning room a simple experience.

Benefits

For teachers

- Same **user experience** in all rooms, no need to learn custom interfaces
- **Simple** user interface with full preview of all sources and displays, no mysterious buttons
- **Control** through content moderation, teachers are in control
- Run the control interface **on any device**
- Any content **easy** to present, simple wireless display connectivity for all devices
- New **interaction capabilities** to pull all students into the lecture
- New **teaching methods** possible

For students

- **Share** content with the class using simple apps
- **Ask** the teacher silent questions
- Give **feedback** by answering polls and quizzes
- **Grab** screenshots from the displays, make annotations and save your class notes
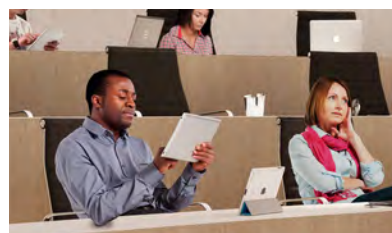
For facility

- Full **BYOD strategy**
- Total **integration** into campus networks and EduRoam
- **Standardized workflow** and interfaces across all rooms
- **Reduced support** activities thanks to minimal amount of equipment in the classroom
- **Cloud** based or on premise network services
- Inherent **room overflow** support
- **Remote control** for support activities
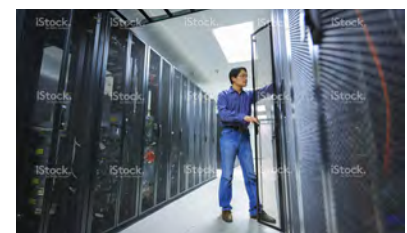
Solutions for any type of classroom

Today's technology makes it possible to move beyond the traditional teacher-centered classrooms. Barco's Collaborative Learning promotes set-ups that allow and encourage students to participate and collaborate more actively, either in the classroom or from a remote location.

Traditional classrooms

Barco's Collaborative Learning brings additional interactivity to the traditional classroom. The extensive BYOD support allows students to mirror their devices, show local or internet content, phrase questions, participate in quizzes, and more - simply by using their own mobile devices connected to the campus WiFi. This makes the system ideal for blended learning (e.g. flipped classrooms). Teachers have full moderation control over student content.
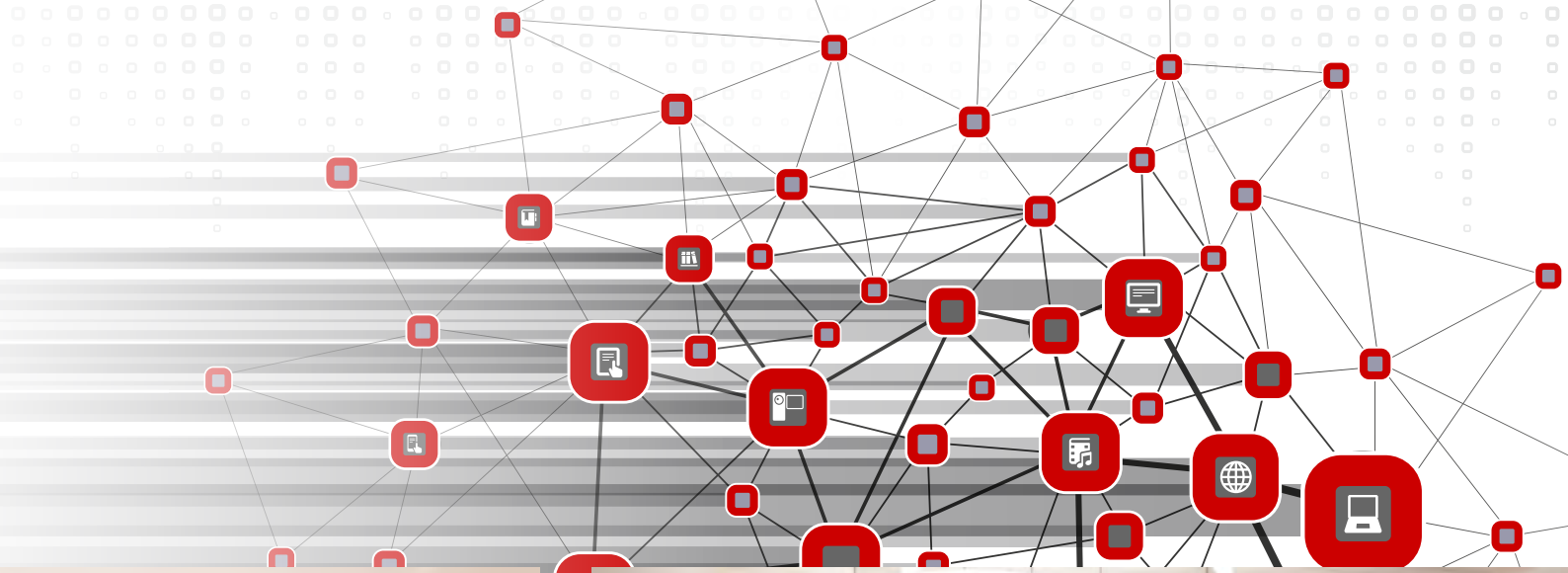

Presentation with embedded quiz

Room overflow

Multiple classrooms or collaboration rooms can be merged to virtually form one single room, so that students who are unable to get a seat in the classroom can virtually have the same features as if they were physically present in the room.

The solution makes better use of the infrastructure and helps optimize the use of the classroom infrastructure. Teachers can teach and support collaboration between students present in different campuses - locally, or anywhere around the world.

Active learning space

Active learning environments support students as they engage in activities such as discussions, writing and problem solving. Such an environment typically consists of one or more central displays and a number of pods with monitors, in which 4 to 8 students work together in groups. Among other things, the spaces aim to improve analysis and synthesis skills through various methods like cooperative, use-case, and problem-based learning.

Barco's Collaborative Learning supports these methods with easy BYOD connectivity for students and teachers, group- and classroom-wide information exchange and interactivity tools. BYOD connectivity includes both hardware and software options to connect laptops (MS Windows, Apple OS X and Linux) and handheld devices (Android, iOS) to the system.

Virtual classrooms

The virtual classroom allows participants worldwide to interact in real time with one another and with the teacher, as if they were all in one classroom. The solution's unique configuration allows the participants to view all of the other participants through an interactive web page, which encourages communication, virtual hand-raising and collaboration in sub-teams. The custom user interfaces offer more options for the students to be aware of their fellow participants in their virtual classroom. The teacher sees a large display wall containing student video. All this helps improve engagement and - together with a number of rapid camera switches - lengthens attention spans to levels like those of a live interactive class.

Other rooms on the campus

Barco's Collaborative Learning is not restricted to classrooms: the same experience can be transferred to other rooms on the campus - including libraries, huddle rooms, or teacher's lounges. Sharing, interacting, discussing... all you need is a mobile device, and some good minds to connect with!

Didactive use: The teacher can control the room and wirelessly display the content used during lectures.

Collaborative use: Students mirror content from their devices on their pod screen. The teachers follow up on the group's progress by walking around and looking at the content view of all pods on the teacher's web-based user interface. At any time, the teacher can lock all pod screens and draw the attention to the front of the room.

Discursive use: Towards the end of the lecture, the teacher can optionally compare content from one or more pods on the main screen(s). Alternatively, students can be asked to present the results of their group's work - then, to show all of the students the presented content, the teacher pushes the pod content from the one group to all of the screens in the room.

Student collaboration

Three layers of interactive learning

Barco's Collaborative Learning brings the convenience of being able to mirror one's own mobile device. But BYOD is not only about sharing pixels on screens - personal devices also become essential collaborative interaction tools.

Barco's Collaborative Learning therefore comes with optional functionality to allow students and teachers to work in groups, to access any content, annotate it and store it locally on their devices, or share the notes within the group or class. Support for quizzes, polls, real-time feedback and silent questions allow all students to be active learners during lectures, and give teachers additional tools to improve and verify student progress through the educational process.

Linking BYOD with the infrastructure

The additional layers of technology added to the initial BYOD capability improve facility management and the engagement of the teachers and students:

The first layer on top of wireless presentation provides collaboration capabilities within rooms: the software supports traditional classroom settings and collaborative and flipped classroom environments.

The second layer integrates the presentation software with the classroom displays through display nodes. This allows the screen content to be visualized in the local room.

The infrastructure integration - the third layer - embeds the system in your network, allowing you to connect to remote locations (both on-campus and off-campus).

The combination of the hardware and cloud software in these layers enables the system to provide a state-of-the-art learning experience in traditional classrooms, active learning spaces, and virtual classrooms. For the Virtual Classrooms this connectivity can be extended over the internet to the student's own location.

BYOD

COLLABORATION

INTEGRATION

INFRASTRUCTURE
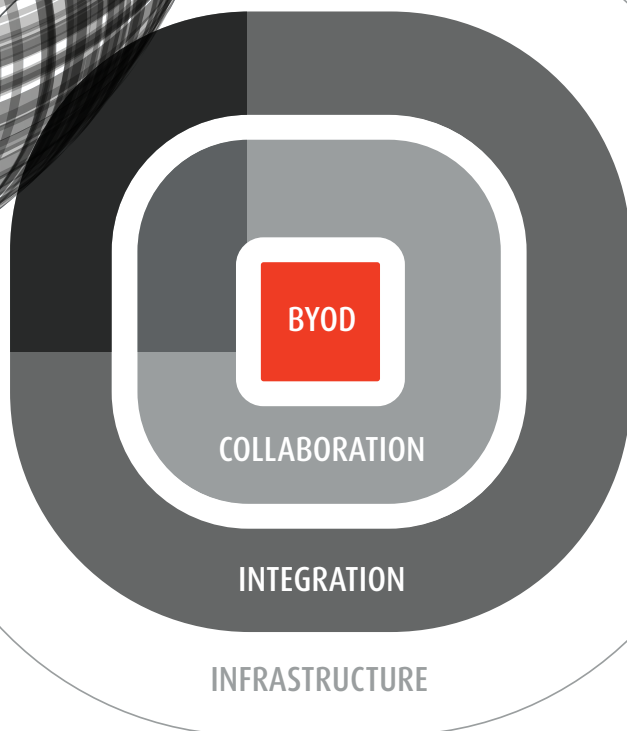
Collaboration

The collaboration layer covers the information exchange, connectivity and interactivity pillars of a Collaborative Learning system. Three groups of capabilities provide an array of tools to be used in the various teaching methods: wireless presentation, interactivity and content generation tools. This functionality is provided as an easily accessible browser based application.
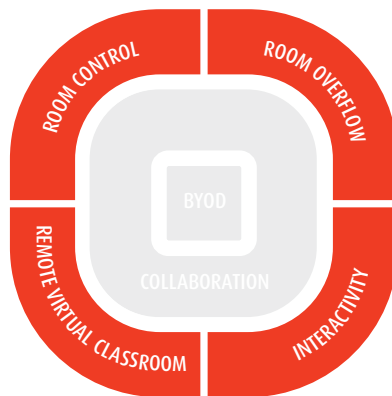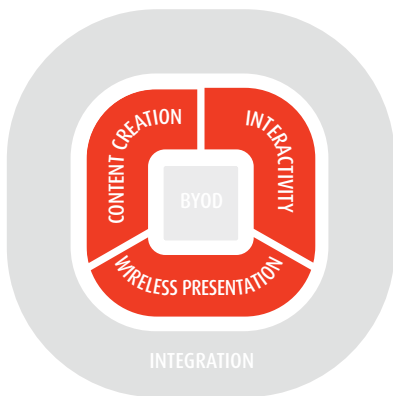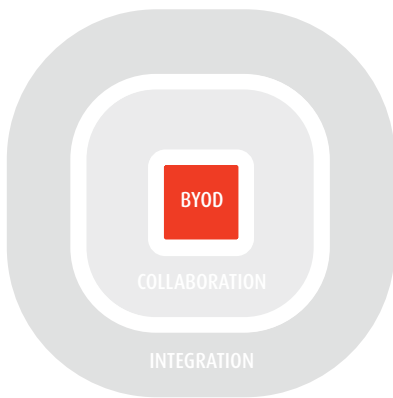
Integration

The integration layer provides hardware and software services to integrate into the campus network, to connect to the displays in the classroom, to interconnect rooms on campus and provide the capabilities for remote off-campus connectivity to remote rooms or students at home. Ecosystem solutions like recording and video conference solutions can be loosely or tightly integrated. HTML5 support makes it possible to integrate with existing room control systems.

Most networked solutions supporting the common H.264 RTSP format - for instance, room cameras, recording services and video play-out services - can be integrated directly into the system.

BYOD

COLLABORATION

INTEGRATION

CONTENT CREATION

INTERACTIVITY

BYOD

WIRELESS PRESENTATION

INTEGRATION

ROOM CONTROL

ROOM OVERFLOW

BYOD

COLLABORATION

REMOTE VIRTUAL CLASSROOM
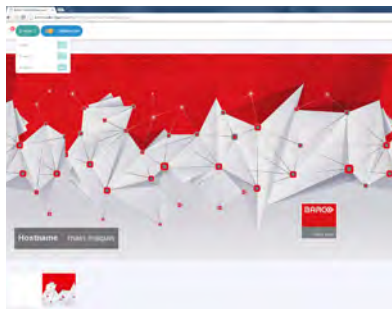
INTERACTIVITY

System components

Barco's Collaborative Learning is a very scalable system. By combining the available components, IT departments can build a system for one small campus, or a complete university spread over several continents.
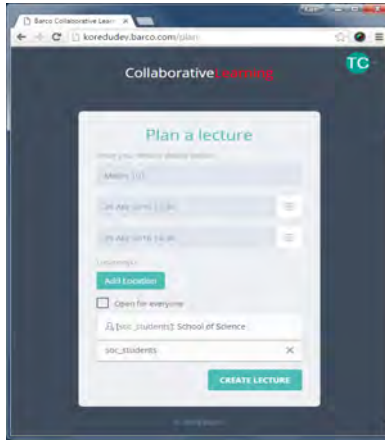
Planning lectures
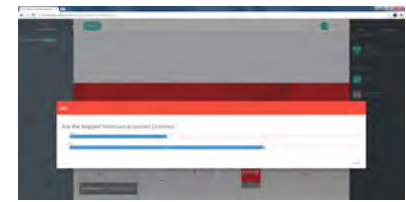
Creating and answering polls

Moderation

Lecture overview for students

Browser App

All users gain access to the classroom system through a web-based cloud app. This is where you enter the lecture and get to use the classroom system. Using the simple browser interface, both teachers and students experience the flexibility and intuitiveness of the software. Students can ask questions, show content, and interact with the teacher in the form of quizzes and polls. The app gives teachers full moderation control of the content shared within the classroom and allows students to get a close up view of what is shown on the classrooms displays. Students can save this view into their favorite note taking application. The cloud-based app gives complete control to the user. Teachers and students can interact in a straightforward way, while students can easily collaborate in teams.

Wireless presentation

Barco's wireless presentation portfolio not only enables teachers to get their presentations on the central screen without any hassle – it also enables the students to share the screens from their mobile devices (laptops, tablets or smartphones) just as easily. This greatly enriches the classroom experience and contributes to a more interactive teaching experience. All major operating systems are supported for a wide range of mobile devices. Only students in the room can connect to the displays while teachers easily control what is shown on screen at all times.
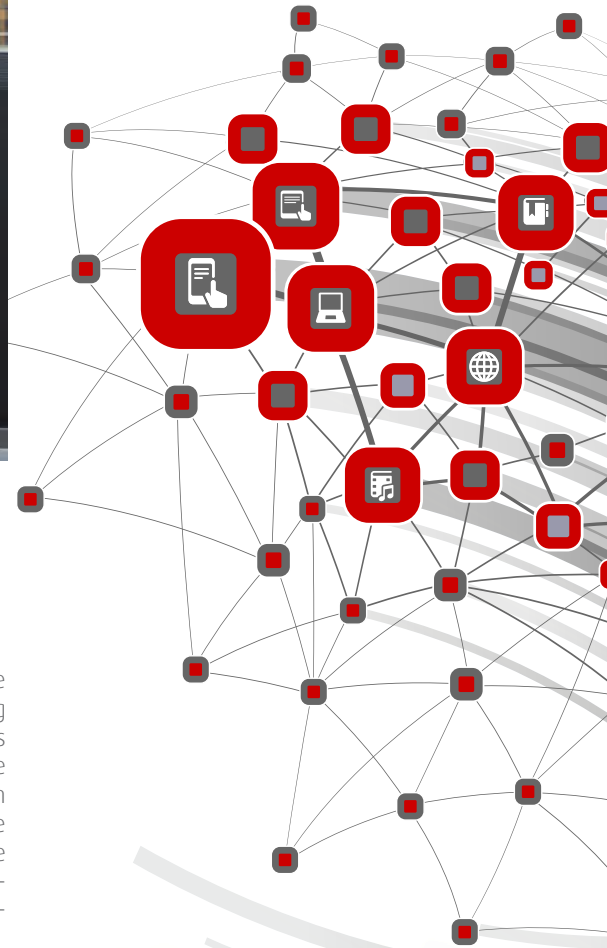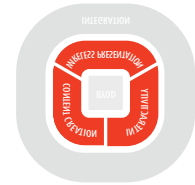
Display nodes

Barco's display nodes allow the teachers and the students to bring their own devices to the classroom and share their information on the pod displays and the main projector. With a number of additional features - enabling teachers to select the needed content and create the optimal layout, for example - Barco's display node portfolio always brings the desired content onto the screen in the most optimal way. Also interaction modules, allowing students and teacher to better work in groups, are built into many of our display nodes.
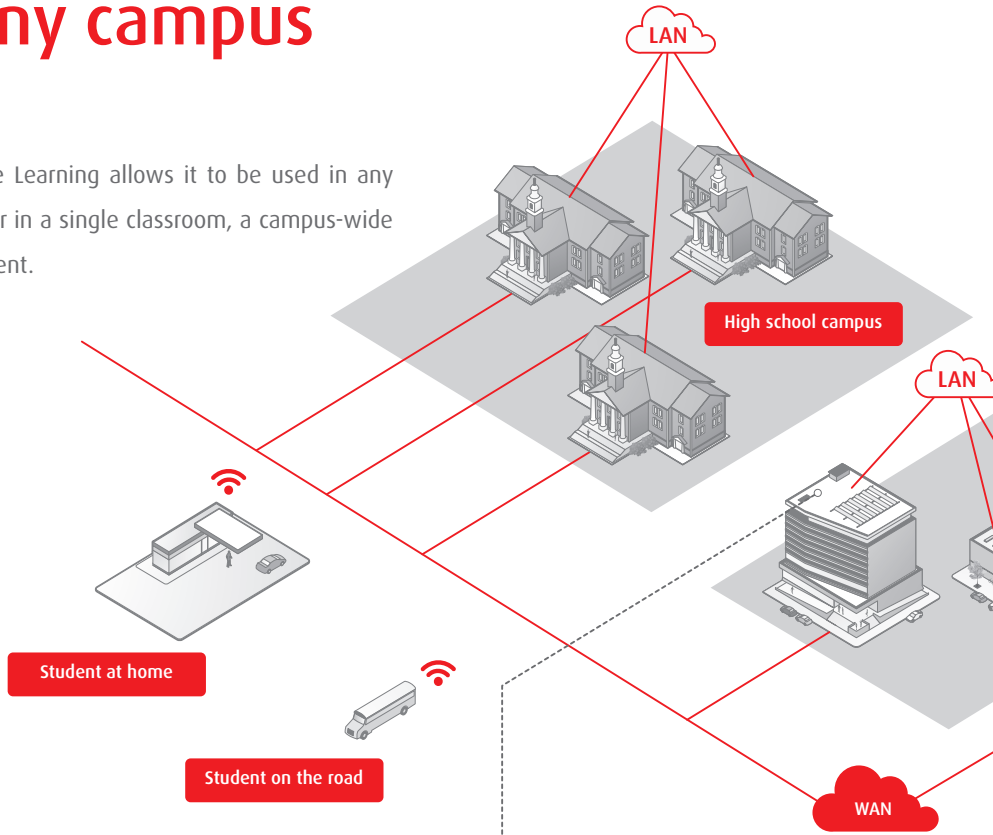
Campus Network

Barco's Collaborative Learning uses the physical infrastructure of the existing campus network. This not only includes the WiFi-network, with optional single sign on (SSO), but also the EduRoam service, to provide secure access to the institution's network. Extra services are provided to support discovery and connectvitiy over multiple WLANs and networks.

Solutions for any campus

The modular setup of Barco's Collaborative Learning allows it to be used in any educational setting. This can be done either in a single classroom, a campus-wide platform, or a multi-site learning environment.

LAN

High school campus

LAN

Student at home

Student on the road

WAN

Control room

Library
BYOD
Huddle space

Meeting room

Entrance lobby
Smartphone interaction
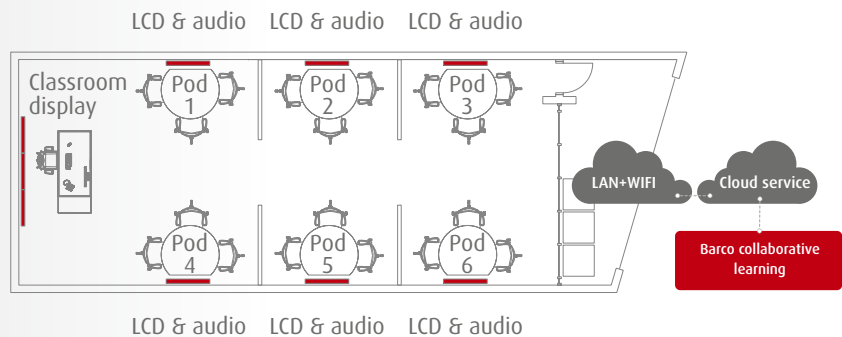
Campus-wide solution

Combining traditional classrooms, active learning spaces and virtual classrooms, one platform serves all BYOD and collaboration needs of the entire campus. Lectures can be followed in class, room overflow or via remote classrooms, and content can be shared from any location.
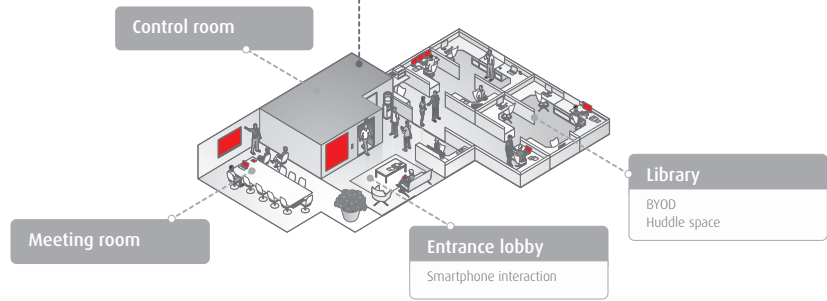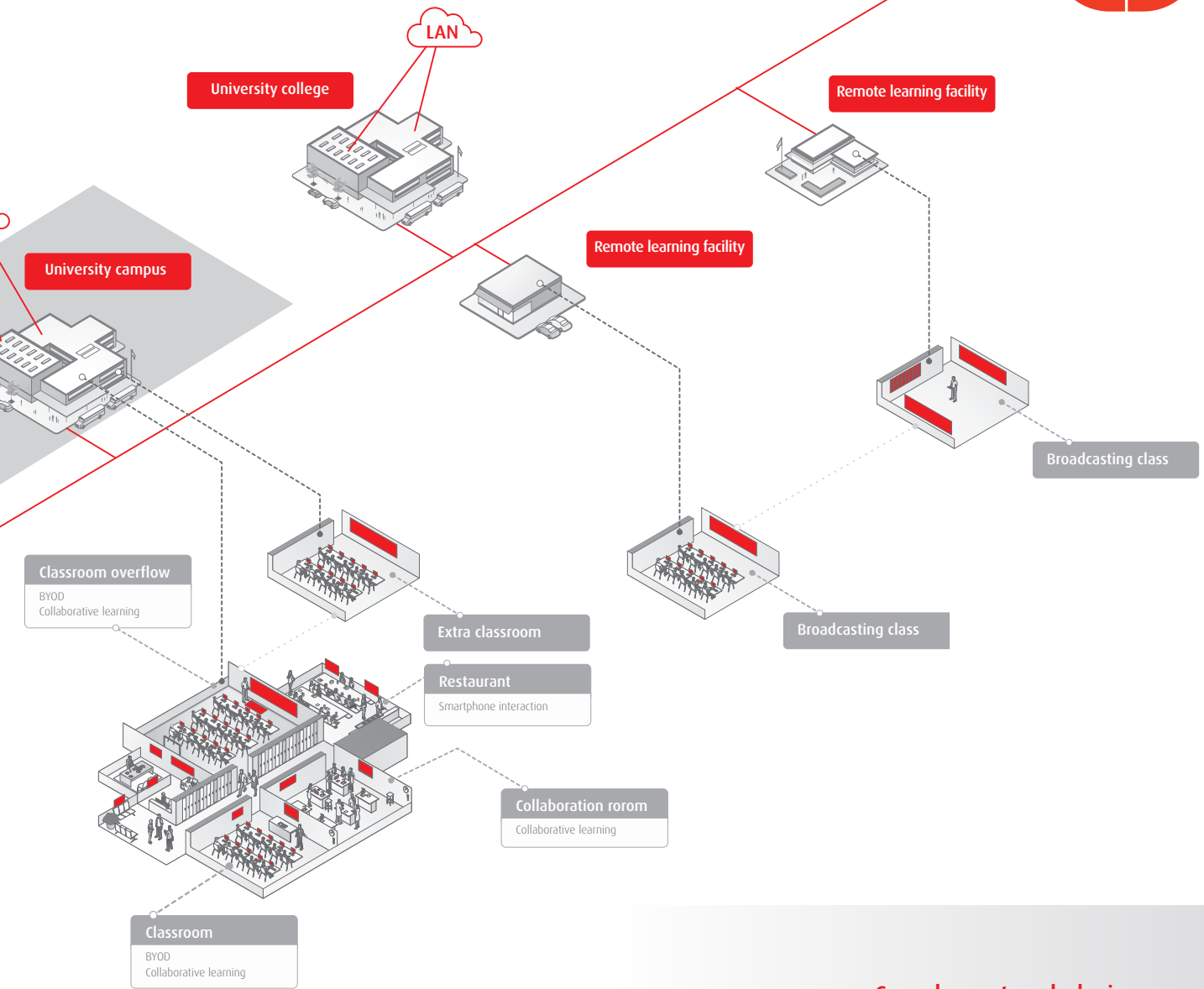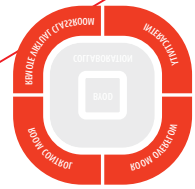
The active learning space

In an active learning space, students work in small groups. Using BYOD technology, they can benefit from the LCD displays in their **pods**, while the teacher can monitor all content. Because all displays are interconnected, all content can be visualized anywhere – even remotely using the cloud. The system design below describes the infrastructure, and is suited for didactic, collaborative, discursive and reflective use.

Collaboration Room system design

LCD & audio   LCD & audio   LCD & audio

Classroom display

Pod 1   Pod 2   Pod 3

Pod 4   Pod 5   Pod 6

LCD & audio   LCD & audio   LCD & audio

LAN+WIFI   **Cloud service**

Barco collaborative learning

LAN

University college

Remote learning facility

University campus

Remote learning facility

Broadcasting class

Classroom overflow
BYOD
Collaborative learning

Extra classroom

Restaurant
Smartphone interaction

Broadcasting class

Collaboration rorom
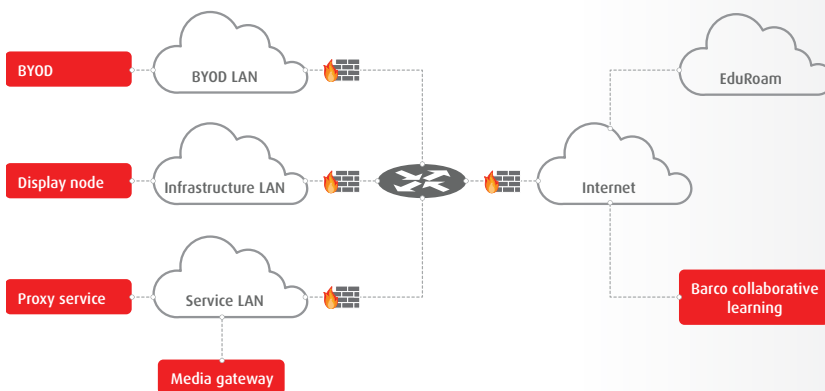Collaborative learning

Classroom
BYOD
Collaborative learning

Complex network design

The networking equipment is used to distribute content, including video and audio in classrooms, on the campus, and over the internet.

Typically, networks for student access, infrastructure components and services are separated. Communication between networks and services passes through a secure proxy with a diode function. Via the internet, the media gateway provides the media links to remote sites.

BYOD

BYOD LAN

EduRoam

Display node

Infrastructure LAN

Internet

Proxy service

Service LAN

Barco collaborative learning

Media gateway

Interaction and collaboration prepares the students
for their future career and teaches them how to
exchange ideas, experience and knowledge

"
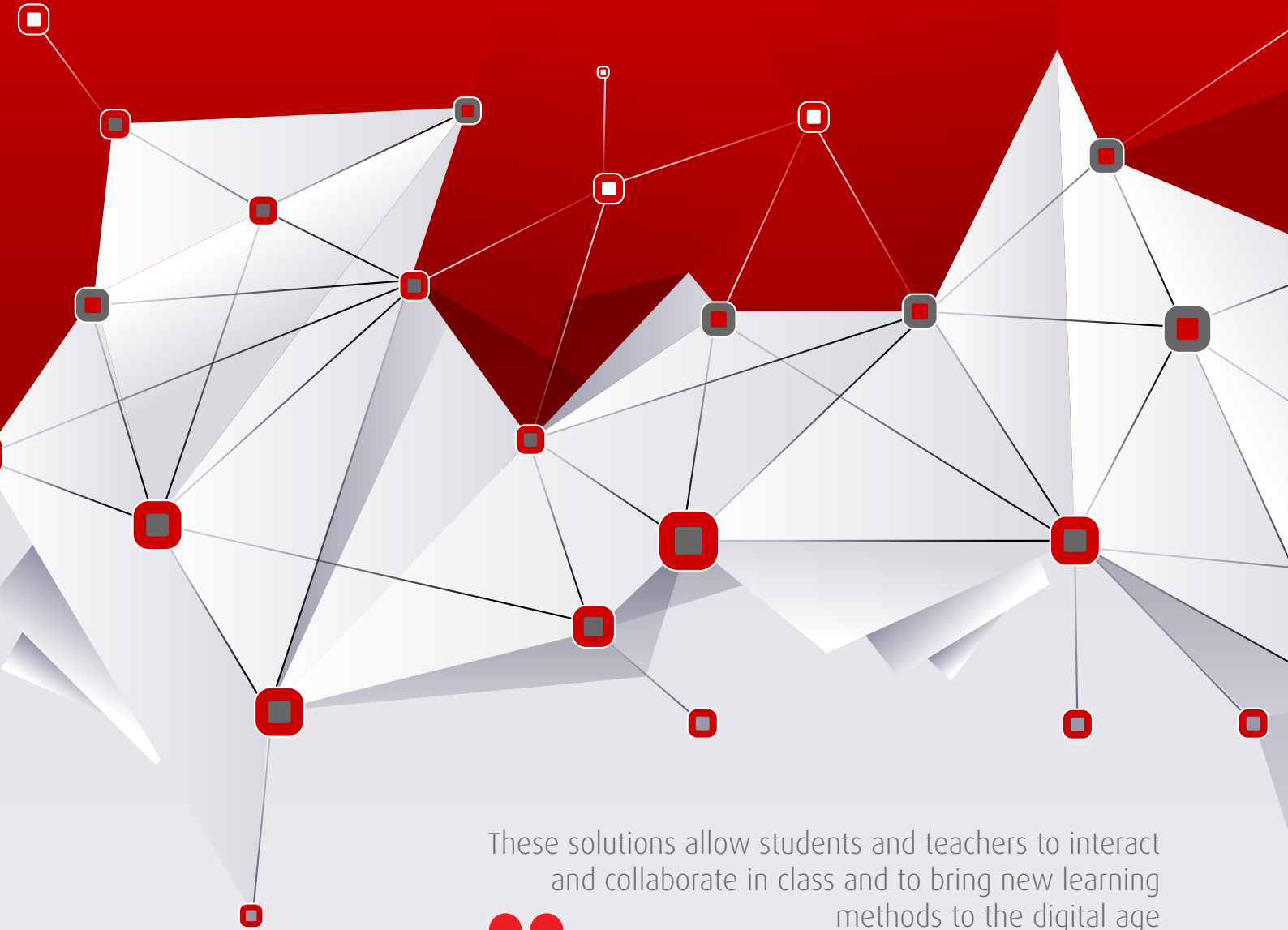
These solutions allow students and teachers to interact
and collaborate in class and to bring new learning
methods to the digital age

"

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