

Functional description PIXILAB Blocks® 7

Professional, freely scalable all-in-one content management and media control system for museums, visitor centers, commercial showrooms, interactive digital signage and similar applications. Unlike previous technological solutions, the system combines all the essential components of such an installation in a common and intuitive software based on open standards such as HTML5, CSS, and JavaScript and can be functionally expanded as desired with scripts under TypeScript.

Server Software and Hardware

- PIXILAB Blocks is programmed to be platform-independent and runs on Microsoft Windows, MacOS, and Linux.
- The server can be operated locally or in the cloud.
- Servers configured by the manufacturer or distributor are delivered with a customized and continuously operational Linux (Ubuntu) and set up in consultation with the customer.
- An identical server can be used as a backup system in mirror mode.
- The entire project is located in a single folder that can be copied for archiving purposes or easily transferred to other servers.
- All areas of the system can be protected via multi-level rights management with password prompts. Users can be assigned to user groups.
- The system can be configured to use an external single-sign-on (SSO) provider, such as Active Directory.
- All licenses are perpetual licenses and do not need to be renewed regularly (no subscriptions). There are no update or subscription costs. Licenses can also be hosted in the cloud for a fee.
- Licenses can also be rented for specific periods of time.

Control System

- The system includes seamlessly integrated, powerful media control. Seamless integration largely eliminates the coordination and interface problems that are otherwise common with large media installations.
- The control system is aware of all content currently being played, enabling logical links to be established internally or to external systems without complex programming.
- The control part of the system supports local and group variables as well as the usual Boolean logic functions.
- The “normal” programming of the control system is user-friendly via the selection of possible options from drop-down menus. Learning a complex programming language is not necessary for this.
- Complex comparison operators can be integrated using JavaScript structures.
- Any additional functionalities that may be required can be added via additional scripts or drivers in the TypeScript language.
- The modular structure of the system saves time by allowing simultaneous programming and normal use or testing of already completed areas.

- External sensors, relays, and similar devices can be integrated via the robust, industrial ModBus network protocol, but also via UDP, MQTT, Nexmosphere X-Talk, etc. USB keys, RFID, or NFC readers can also be used to trigger events.
- Lighting devices can be addressed directly via Artnet. KNX, DALI, Casambi, or zigbee are supported via optional gateways.
- The DMX recording module allows complex light shows, programmed on an external lighting console, to be recorded and played back.
- Other external devices, such as projectors, displays, external PCs, or other subsystems, can be integrated via TCP/IP or UDP.
- External computers running third-party applications can be controlled using the UIROBOT helper application.
- Drivers for various protocols, such as PJLink, are already integrated. Missing drivers can be programmed independently using TypeScript or ordered from the manufacturer for a fee.
- Input keys or RFID/NFC readers can be connected directly to the players. The actions triggered here are still visible for the central control system.
- WATCHOUT™ subsystems can be integrated very closely. The control system can automatically retrieve information from the WATCHOUT system, including the current timecode from timelines for synchronizing the multimedia guide, lighting, etc.
- The system can send messages by email or using services like Slack.

Content Management and Payout

- Any device with a HTML5-enabled browser can be used as a playback device. Devices with multiple physical outputs can be set up as a larger, combined playback area.
- Preconfigured players are delivered with a modified and extremely reliable minimal Linux kiosk operating system. The PIXILAB players are tamper-free and visitors can't leave the kiosk mode or shut down the system.
- The server streams content to all playback devices in real time. Optionally, content can also be cached locally.
- Players can also be loaded with content and then used without a connection to the Blocks server. Interactions with other devices or the Blocks media control are then of course not possible.
- Playback paths (spots) can be synchronized or function completely independently of each other.
- Synchronization takes place continuously internally or to external timecode.
- The Timeline Block allows easy arrangement of media and external devices, such as lighting, along a timeline. This also works with player groups.
- The maximum number of players in the system is not limited and is practically only restricted by the network bandwidth and server configuration.
- From version 7 of the software onwards, the player software of the playback devices can be updated via the network if required. Configurations can be changed in the Display Spot settings.
- PIXILAB players can be monitored using screenshots.
- Content is managed via web access on a very intuitive user interface.

- Content (all standard formats that a browser can usually play, e.g., WebM, MP4, M4A, PNG, JPEG, SVG, GIF, HTML, Web-GL) can be combined and arranged in freely customizable compositions with pixel-perfect precision.
- In addition to local media, content can also be imported via URL paths and from databases.
- The content can be displayed in a variety of formats, including full-screen mode, with the option of adding a background image.
- Blocks can be logically linked and nested in a variety of ways (attractor, book, slideshow, etc.).
- Folder structures and reference blocks allow for clear and effective project creation.
- Content is assigned to playback paths using simple drag & drop.
- Time sequences are possible via the scheduler with any number of priority layers (special times override standard times).
- Each element in a composition can be dynamically and interactively influenced with behaviors, such as movements, scaling, keystone correction, rotation, appearance, playback speed, and more.
- Tagging content and playout paths allows automatic assignment to players and dynamic changes to content based on interactive actions.
- Interactive buttons, keys, faders, dynamic text fields, text input fields, and other display elements can be used to create compositions with interactive content, e.g., for touchscreens, tablet PCs, or smart devices.
- All interactive elements can be designed as desired using CSS (CI fonts, display of buttons and other elements, etc.). CSS elements can also be changed dynamically using properties and variables.
- Live signals can be integrated via USB capture cards (e.g., HDMI for external presentation notebooks) or via standard streaming protocols (RTSP, HLS, MJPEG, JPEG polling).
- Dynamic texts can be entered and changed via text input fields on a customizable user interface, but can also be read from external databases or tables via feed scripts.
- Three-dimensional objects can be displayed using the new 3D block.
- Panorama blocks can be used to display panoramic images (360°) and any navigation and interaction areas can be positioned on them. It supports gyroscope and compass for a VR-like experience.
- The Magazine block can be used to mimic page turning in a book.
- The Deep Zoom block allows zooming and panning in very large high-resolution images.
- Ready-made web widgets (e.g., weather, stock prices, etc.) from third-party providers can be seamlessly integrated.
- User interaction can be monitored by connecting PIXILAB parameters to analytic systems like matomo.

Multimedia (Audio) Guide

- The system includes a powerful multimedia guide function and allows synchronous playback of audio tracks on separate smart devices for each display playback channel.
- Any device that can open a current web browser can be used as a playback device, e.g., visitors' own smart devices. An app does not need to be installed for normal operation.
- There is no limit to the number of language or guide versions.
- Additional information can be displayed on the screens of smart devices, and interactive control elements can also be integrated if required.
- In addition to entering numbers or operating via images (buttons), QR codes or GPS geolocations can be used to retrieve multimedia data for a location.
- For a barrier-free multimedia guide system, where the user only has to click on QR codes or the devices respond to beacons, robust and very compact multimedia guide players can be supplied.
- If WATCHOUT™ subsystems from the manufacturer Dataton are integrated into a media installation, e.g., for large soft-edge projections or 3D projection mapping, the multimedia guide system can also synchronously play audio tracks for this purpose. This also works with media servers from some other manufacturers.
- The behavior of individual BYOD devices can be optionally tracked for interactive visitor experiences.

Status: Blocks Version 7.6