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DMX AUTHORING SOFTWARE SELECTION FOR SMES' ARCHITECTURAL AND ENTERTAINMENT LIGHTING IN CENTRAL JAKARTA

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Abstract

The use of DMX-based lighting control systems is increasingly relevant for small and medium enterprises (SMEs) in the culinary, entertainment, and hospitality sectors in the Mangga Besar area of Central Jakarta to enhance the visual appeal of business spaces. However, the selection of DMX authoring software is often based on technician habits or vendor recommendations rather than on structured and user-oriented criteria. This community service program aims to assist SMEs in understanding and selecting DMX authoring software that fits their operational needs. The approach involved a documentation review of two commonly used applications, Euchips Designer (EuchipsX-DMX) and ColorPlay 3. Feature information and workflows were extracted from official manuals and normalized into a shared checklist covering setup/mapping, grouping, effects, timeline authoring, project/show management, and configuration and deployment support. The results were used as educational and mentoring materials for SME participants. The activity results indicate that ColorPlay 3 provides more comprehensive workflow documentation from mapping to deployment, including an effects catalog, timeline layering/stacking mechanisms, and support for data portability and playback configuration. Meanwhile, EuchipsX-DMX emphasizes timeline-based scene editing for decorative and architectural lighting with multi-zone and synchronization support, although its feature descriptions are less detailed than those in ColorPlay 3 documentation. This assistance program enabled SMEs to gain a more structured understanding of how to select and implement DMX authoring software according to their visual and operational requirements.

Keywords: *DMX512, Lighting Control, ColorPlay3, SMEs*

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INTRODUCTION

Smart lighting is increasingly positioned not only as a technical infrastructure but as an operational system that directly supports daily activities in urban and commercial environments. In practical settings such as public roads, commercial buildings, and mixed-use spaces, lighting must be efficient, easy to control, and manageable over time. International reviews indicate a shift in street lighting strategies from rigid time-based operation toward adaptive approaches using sensing, networking, and data-driven rules to reduce energy waste while maintaining safety and visibility standards (Agramelal et al., 2023; Bachanek et al., 2021). Similar tendencies are found in Indonesian studies, where smart streetlight development is driven by real-time efficiency needs and remote monitoring, particularly when local governments seek solutions that are affordable, scalable, and replicable in community settings (Hidayat et al., 2024). From a system perspective, smart lighting is not a single device but a layered integration of luminaires, drivers, control protocols, sensors, communication networks, and supervisory software (De Bakker et al., 2017) (Hadikusuma & Santoso, 2025). Research in building and city contexts consistently shows that energy performance and user satisfaction depend on how well these layers especially control logic and configuration workflows are aligned, not only on LED hardware alone (Paolone et al., 2025; Zocchi et al., 2024). Studies on tele-management and driver control further emphasize that usable tools for commissioning and daily operation are critical, because many practical problems emerge during setup and maintenance rather than during routine use (Adam, 2019; Bellido-Outeiriño et al., 2016).

Within this broader control landscape, DMX (Digital Multiplex) remains widely applied in architectural, decorative, and entertainment lighting. It offers a direct method for sending addressed channel values for intensity and color parameters to luminaires. However, in real-world practice, the user experience is shaped less by the protocol itself and more by the authoring software layer, where users define fixtures, patch addresses, group nodes, design scenes and effects, organize timelines, and manage show files across revisions and handovers (Ilchev, 2023). This is consistent with local broadcasting and studio practices in Indonesia, where DMX control is increasingly handled through software-based workflows instead of dedicated consoles to improve accessibility and ease of use (Tangkas, 2020). Because software choices in the field are often influenced by vendor habits rather than transparent evaluation criteria, a structured comparison becomes important as part of community education and technical assistance (Moumane et al., 2016). The software evaluation literature recommends using explicit quality indicators such as functional suitability and usability evidence to reduce subjectivity in tool selection, especially when direct performance testing is not part of the activity design (Adewumi et al., 2016). Based on this rationale, the present community service activity uses a documentation-based comparison of ColorPlay 3 and EuchipsX-DMX, focusing on what each tool explicitly describes about its workflow, features, and controller

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ecosystem, and translating this information into guidance materials for local partners (*ColorPlay 3 Software*, n.d.).

METHOD

This study applies a documentation-driven comparative design to evaluate two DMX authoring applications ColorPlay 3 and EuchipsX-DMX based strictly on the content of their respective user guides. No physical testing was conducted using luminaires, controllers, or network measurements therefore, the unit of analysis is documented capability rather than measured performance. To make the procedure transparent and reproducible, the workflow is summarized in a diagram block.

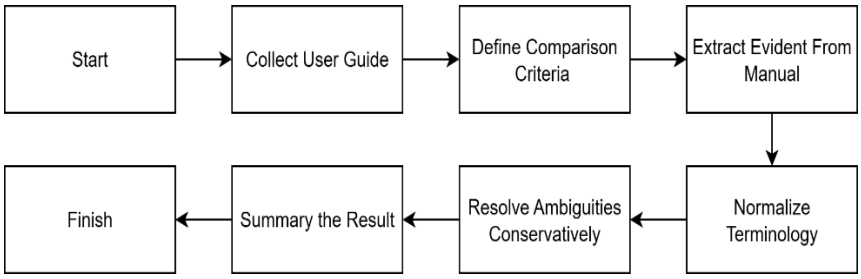

Figure 1 Research Diagram Blok

1. Collect User Guide

The primary data sources are the ColorPlay 3 User Guide and the EuchipsX-DMX (X-DMX) User Manual provided for this research. Each document was treated as authoritative evidence of intended workflow, stated features, and supported configuration. Document identity title and version/revision as written in the guides was recorded to ensure that the comparison refers to a fixed documentation snapshot.

2. Define Comparison Criteria

Before extracting content, the comparison criteria were defined to keep the analysis consistent across both manuals. The criteria cover (i) platform and system requirements, (ii) workflow structure and project elements, (iii) fixture setup and organization (groups/zones/scenes), (iv) effects and timeline/sequence authoring, (v) deployment/playback configuration, and (vi) portability features such as saving/loading projects and import/export mechanisms, if documented.

3. Extract Evidence From Manual

Relevant statements describing features, steps, limitations, and interface functions were extracted from each user guide and logged in an extraction sheet. Each extracted item was tied to a traceable reference (section or page context) so that every claim in the results can be verified from the manuals, and so the study does not infer features that are not explicitly described.

4. Normalize Terminology

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Because different vendors often use different terms for similar concepts, key terminology was normalized into shared labels to enable like-for-like comparison. For example, "show" or "project" concepts were aligned under project structure, while "grouping" and "area/zone/scene" concepts were mapped under fixture organization, and "timeline," "sequence," or "effect track" concepts were mapped under authoring and playback logic.

5. Resolve Ambiguities Conservatively

When a feature was not clearly stated, it was not assumed to be present; instead, it was marked as "unclear" and discussed as a limitation of available documentation. If the manual explicitly described a feature, it was marked as documented, and if it clearly implied the absence of a capability (or provided no evidence after relevant sections were reviewed), it was treated as not documented for the purposes of the comparison. This conservative rule was applied to avoid overclaiming.

6. Summary the Result

The extracted and normalized items were compiled into a comparison matrix and synthesized into narrative findings that highlight practical differences between the two software ecosystems. The summary emphasizes workflow orientation, feature depth (especially in effects/timeline authoring), and documented portability/deployment support, while keeping conclusions aligned with the scope of a manual-based study rather than measured performance benchmarking.

RESULT AND DISCUSSION

1. Product Ecosystem and Platform Support

ColorPlay 3 is explicitly documented as cross-platform software with identical functions on compatible macOS and Windows systems, and it lists relatively light system requirements (Windows 7+ or macOS 10.9+, 512 MB RAM, 30 MB disk). The manual positions it within the Color Kinetics controller ecosystem (iPlayer 3 and iColor Player).

Figure 2 Iplayer 3 DMX Controller

X-DMX (EuchipsX-DMX) is documented as a DMX lighting control software used for commercial lighting management. It describes selecting a connection device notably

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USB connection, then operating through a project-based workflow. The manual versioning and revision record are also provided.

Figure 3 Euchips DMX Controller

Based on documentation clarity, ColorPlay 3 is presented as a polished cross-platform authoring environment tied to specific controllers, whereas X-DMX is framed more as a practical control tool for commercial lighting with a simpler manual and a clearer emphasis on scene/group management rather than detailed feature mechanics.

2. Workflow model and core objects

ColorPlay 3 defines a light show as digital instructions that include fixtures, groups, effects, and configurations with playback rules such as triggers and optional alarms. It also documents a five-step workflow map fixtures, group fixtures, create effects, simulate/refine in a timeline editor with multiple tracks, then download and configure the show including triggers/alarms.

X-DMX describes a workflow that begins by creating a project, adding fixtures, then building zones and scenes (with an explicit note that scenes belong to areas and equipment cannot exist in two regions simultaneously except the global area).

The two manuals reveal different authoring philosophies. ColorPlay 3 reads like a show authoring pipeline designed to move from mapping to deployment with detailed structure. X-DMX is more operations-forward for group/scene management first, then simple effect editing, then sending the scenario to the device.

3. Addressing scale and mapping support

The two manuals reveal different authoring philosophies. ColorPlay 3 reads like a show authoring pipeline designed to move from mapping to deployment with detailed structure. X-DMX is more operations-forward for group/scene management first, then simple effect editing, then sending the scenario to the device.

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ColorPlay 3 provides explicit DMX addressing details. It states that iPlayer 3 supports two DMX universes, and since each universe has 512 addresses, it can control up to 1,024 DMX addresses. It further explains addressing behavior 8-bit vs 16-bit, channel-per-node logic) and ties these rules to practical planning constraints.

By contrast, the X-DMX manual in the provided version does not present a comparable, explicit addressing capacity statemen in text. It focuses on device connection, project creation, fixtures, and area/scene structure. So ColorPlay 3 offers more explicit documentation. For X-DMX, any addressing claims beyond basic DMX usage would require a separate controller datasheet/manual not included in the current dataset.

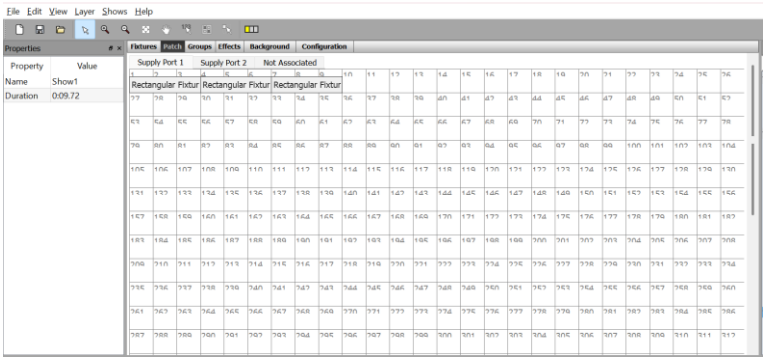

Figure 4 Addresing Patch ColorPlay3

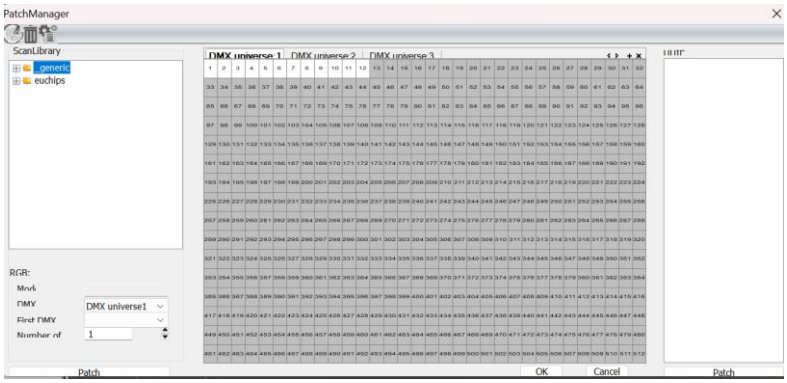

Figure 5 Addresing Patch EuchipsX-DMX

4. Grouping logic and sequencing behavior

In ColorPlay 3, grouping is central. Effects are applied to groups (not fixtures), multiple effects can be stacked or placed consecutively, and the manual describes how group node order affects sequencing-sensitive effects.

More importantly, for effects where node order matters, the manual states that a group's node order overrides the DMX addressing scheme, and it offers built-in node-order schemes plus custom ordering.

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X-DMX uses a different structural concept: areas/zones and scenes. It clearly states constraints on how fixtures belong to regions and frames scene control as tied to those regions.

So ColorPlay 3's group model is documented with enough detail to support complex sequencing independent of raw DMX address order. X-DMX is documented more in terms of "scene management across areas," which can be a practical model for commercial installations where space-based control is the main requirement.

5. Effects library and timeline capabilities

ColorPlay 3 documents an extensive effects environment. It explicitly lists 24 effects plus five modifier effects, and it explains that modifier effects influence stacked effects underneath when transparency exists. It also describes effect stacking and transparency using timeline rows, including priority rules upper effects take precedence; transparency allows lower layers to show through.

X-DMX documents a much smaller effect set: Static, Gradient, and Curve, with static described as fixed color.

On paper, ColorPlay 3 is clearly aimed at richer show authoring with layered effects and a more formal timeline approach. X-DMX appears intentionally simpler: a limited set of effects that match common commercial lighting scene needs (fixed color and basic transitions).

Figure 6 Library Effect ColourPlay3

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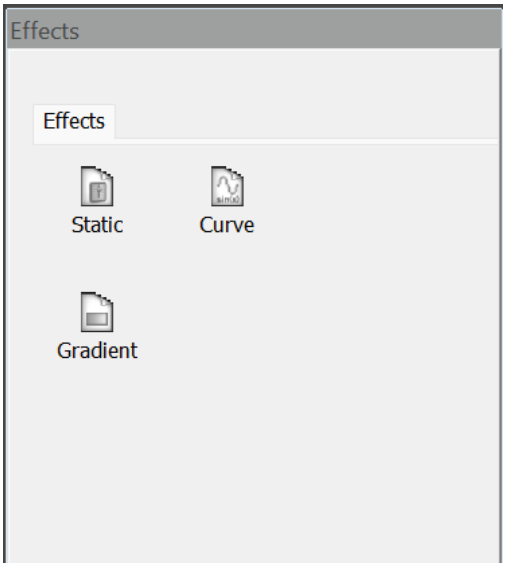

Figure 7 Library Effect X-DMX

6. Deployment, portability, and configuration handling

ColorPlay 3 states that users can download light shows and manage show files, and it explicitly includes triggers and alarms as part of show configuration. It also supports export/import of fixture information through CSV, including DMX addressing, univers e/port, fixture type, and related metadata.

X-DMX documents "download the scenario" after editing effects, and it includes open/save configuration functions plus language selection. It also notes that users can turn off the software and play the scene on the device, suggesting a standalone playback behavior dependent on device specifications.

So ColorPlay 3 offers stronger documentation for portability CSV workflows and automated playback configuration triggers/alarms. X-DMX emphasizes straightforward deployment and device-based playback, which may suit installations where the controller is expected to run scenes independently after configuration.

Based from all research you can see the table comparison to easiest understand the research.

Tabel 1 Student Distribution Frequency

Aspect	ColorPlay3	EuchipsX-DMX
Ecosystem	iPlayer 3 / iColor Player authoring software	DMX intelligent lighting control for commercial lighting scenes/groups
OS Support	Windows + macOS; identical functions	Windows + macOS; identical functions
Workflow	5-step authoring pipeline	Project → fixtures → zones/scenes → effects → download scenario
Addresing	Two DMX universes / 1,024 addressed	512 Addressed
Effects	24 Effects + 5 modifier	Static, Gradient, Curve
Playback Configuration	Triggers + Optional alarms	Hardware Setup

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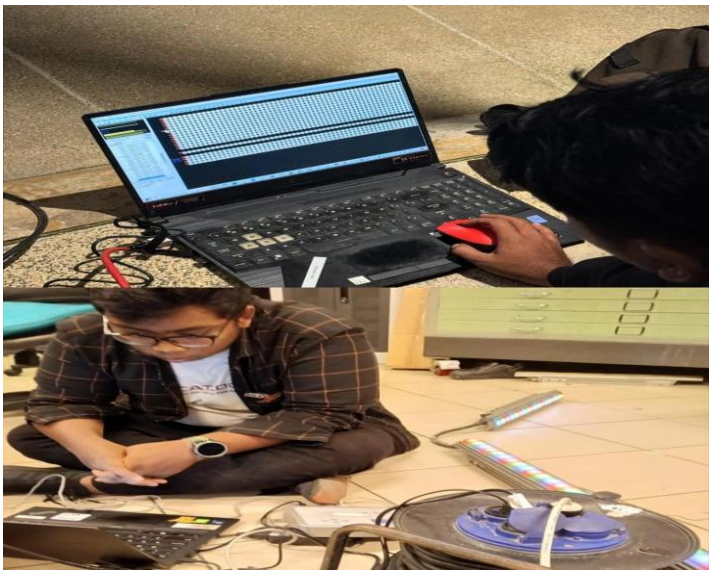

Figure 8 Implementation of DMX System

CONCLUSION

Based on the documentation review used in this community service activity, ColorPlay 3 is presented as a full-featured show authoring environment for the iPlayer 3/iColor Player ecosystem, with a clearly structured workflow from mapping and grouping to multi-track timeline editing and deployment. It provides explicit addressing scale information (two universes / 1,024 addresses), a broad effects library (24 core effects plus modifiers), and formal stacking and priority rules that support complex, layered lighting programs. These characteristics make ColorPlay 3 well suited as a learning reference for partners who need advanced visual presentation and dynamic lighting scenes. EuchipsX-DMX (X-DMX), based on the analyzed manual (V0.2), is positioned as a practical DMX control application for commercial lighting that emphasizes equipment grouping, area/zone-based scene management, and a limited set of basic effects (Static, Gradient, Curve). The documented workflow—connecting devices, creating projects, adding fixtures, assigning zones and scenes, editing effects, and downloading scenarios—reflects a direct and accessible approach for everyday operational use. This makes EuchipsX-DMX more appropriate for partners whose priority is simple, stable, and easy-to-maintain lighting control.

Overall, the mentoring and knowledge-transfer process in this community service program helped local partners understand that ColorPlay 3 is more aligned with structured show authoring and layered visual effects, while EuchipsX-DMX is more aligned with straightforward commercial scene control where area-based management and simple transitions are prioritized. Because the activity is based on documentation analysis rather

than on-site performance testing, these conclusions represent documented capabilities used as educational guidance for the community, not as measured benchmarks under real installation conditions.

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