

Video wall software. Control *every source* from a single browser.

A unified platform for building video walls in dispatch centres, situation rooms, monitoring centres and industrial control systems. It brings video, telemetry and analytics together on one screen — IP cameras, media streams, documents, web panels, sensor data and video analytics — running 24/7 with no operator.

NVIDIA GPU

RTSP • SRT • WEBRTC

NDI • HLS • IPTV

PTZ / ONVIF

VMS • AI ANALYTICS

REST API

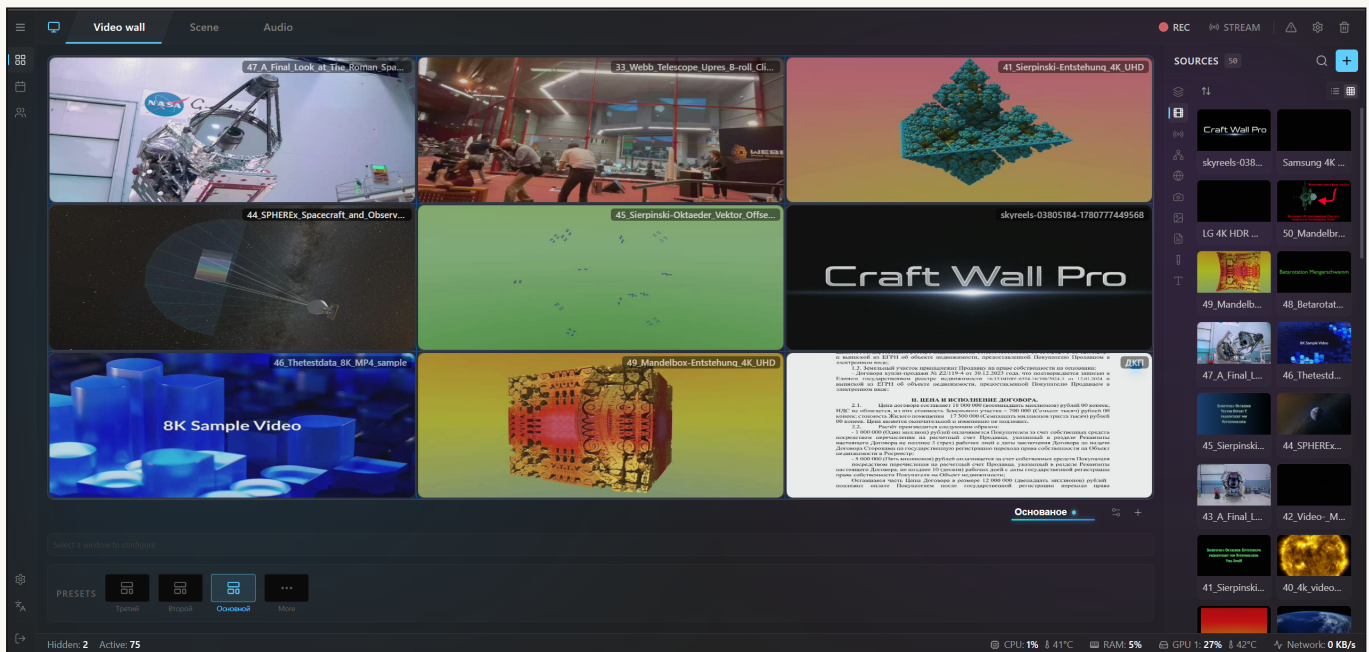


FIG. 1 — OPERATOR WORKSPACE: LIVE SOURCE MOSAIC AND THE SOURCE PANEL (50+)

§ 01 — ADVANTAGES

A platform, *not a controller*

01 Dozens of sources on one wall Up to 64 sources simultaneously, free window arrangement across the canvas.	02 Video wall of any dimension N×M grid with frame-accurate sync and bezel compensation.
03 NVIDIA hardware acceleration Decoding, composition and analytics on the GPU, zero-copy, minimal latency.	04 Every key broadcast protocol RTSP, RTMP, SRT, WebRTC, HLS/DASH, NDI, multicast/IPTV.
05 PTZ control and VMS integration PTZ over ONVIF; connect Macroscop, Trassir, Milestone and more.	06 Widgets and telemetry Live sensor data over MQTT, Modbus, OPC UA, SNMP and more.
07 AI-based video analytics Object and event detection, licence-plate and face recognition.	08 Scenarios and alarms Automatic layout switching on an event.
09 24/7 resilience Hot standby, source self-healing, role-based access, logging and an open REST API.	

50+ SOURCES IN PARALLEL	<10% CPU UTILISATION	24/7 CONTINUOUS OPERATION
8K MAX RESOLUTION	0 CLIENT INSTALLS	3 sec DETECTION & RECOVERY

ON THE DELIVERY SCOPE

This document describes the platform's **full target functionality**. The actual set of sources and capabilities depends on the application version and edition and is defined by the delivery specification. Check with your supplier which functions you specifically need — some of the listed capabilities may not be included in the chosen package.

Source summary table

SOURCE	ACCEPTS	CONTROL / CAPABILITIES
VIDEO STREAMS 9 SOURCES		
RTSP / IP cameras	RTSP video (H.264/H.265/AV1)	PTZ (ONVIF): pan/zoom/focus/presets
RTMP	RTMP broadcast	pause, sync
SRT	secure stream with reconnect	low latency, encryption
WebRTC (WHIP/WHEP)	browser stream	latency < 1 s
HLS / MPEG-DASH	HTTP adaptive stream	automatic quality selection
RTP / Multicast (IPTV)	TV channels, multicast video	channel selection
HTTP-MJPEG	webcams, simple IP cameras	—
NDI	studio equipment	PTZ, KVM (mouse/keyboard)
LiveKit / conference	conference participant	select room/participant
FILES & MEDIA 4 SOURCES		
Video files	local video (MP4/MKV/MOV...)	pause, seek, loop
Images	JPEG/PNG/SVG...	scaling
Documents	PDF/DOCX/XLSX/PPTX/ODF...	paging, zoom, scroll
Carousel / playlist	source rotation	interval, sequence
WEB CONTENT 2 SOURCES		
Web page	sites, dashboards, HTML5	navigation, click, input, zoom
Video conferencing	Zoom / Teams / Jitsi (web client)	join a meeting
CAPTURE 5 SOURCES		
USB cameras / V4L2	USB cameras, consumer cards	format/resolution selection
SDI / HDMI (pro)	Blackmagic/DeckLink, up to 12G-SDI	up to 4K/8K, embedded audio
Wireless display	AirPlay / Miracast / Cast	BYOD presentation
TV tuner (DVB-S/T/C)	terrestrial/cable/satellite TV	channel selection
DLNA / UPnP	network media libraries	browse and select
REMOTE ACCESS 4 SOURCES		
VNC	PC screen	mouse, keyboard
RDP	Windows desktop	mouse, keyboard, clipboard

SOURCE	ACCEPTS	CONTROL / CAPABILITIES
Application (agent)	Windows/Linux app window	streaming + input
Spice	VM consoles	mouse, keyboard
SURVEILLANCE 2 SOURCES		
ONVIF (auto-discovery)	cameras on the network	discovery, PTZ, events
VMS integration	Macroscop/Trassir/Milestone...	live video, PTZ, alarms
ANALYTICS 2 SOURCES		
Video analytics (AI)	detection overlay on video	objects, plates, faces, events
3D / LiDAR / point clouds	volumetric scenes	visualisation
DATA 2 SOURCES		
Widgets and telemetry	sensors and devices	MQTT/Modbus/OPC UA/SNMP...
Information feeds	news, quotes, weather	RSS / exchange / messengers
SERVICE 1 SOURCE		
Test patterns	pattern generator	wall calibration

§ 03 – SECTION 1

Network video streams

1.1 – RTSP / IP cameras

Receiving video from IP cameras, NVRs and RTSP servers — the primary protocol of security and process video surveillance. RTSP over TCP or UDP; codecs H.264, H.265 (HEVC), VP8, VP9, AV1; resolution up to 4K and beyond. Latency profiles `low_latency` (≈ 150 ms) and `buffered`, manual buffering (0–10000 ms), dropping of stale frames and retransmission requests. PTZ control over ONVIF: smooth-speed pan/tilt, optical zoom and focus, presets and patrol. Automatic reconnection on signal loss without affecting the rest of the wall.

1.2 – RTMP broadcast

Receiving RTMP streams from encoders, broadcasters and CDNs. H.264/H.265 codecs, latency tuning and sync with the wall refresh rate, playback control.

1.3 – SRT (Secure Reliable Transport)

A modern transport for delivering video over unstable and public networks (internet, satellite, LTE). Caller / Listener / Rendezvous modes, MPEG-TS payload (H.264/H.265, AV1), AES encryption, loss recovery (ARQ) and auto-reconnect, configurable latency from ~ 120 ms. Ideal for video from remote sites — **drones/UAVs, body cameras and mobile teams**.

WEBRTC · 1.4

Latency < 1 s directly from the browser (WHIP/WHEP).
VP8/VP9/H.264/AV1.

HLS/DASH · 1.5

HTTP adaptive streams (OTT, CDN) with automatic quality selection.
H.264/H.265/AV1.

IPTV · 1.6

TV channels over UDP/RTP multicast (SPTS/MPTS, MPEG-TS), channel selection.

MJPEG · 1.7

MJPEG over HTTP from webcams and simple IP cameras without RTSP.

NDI · 1.8

Studio sources, mDNS discovery, PTZ and KVM, up to 4K · 24–60 fps.

LIVEKIT · 1.9

Conference participant's video track (LiveKit / PlugNMeet), room selection.

§ 04 – SECTION 2

Files and media library

Video files — hardware decoding on the GPU. Containers MP4, MKV, MOV, AVI, WebM, TS, M2TS, FLV, WMV, M4V, 3GP; codecs H.264, H.265/HEVC, VP8, VP9, AV1; up to 4K and beyond; start, pause, seek, loop. Files are prepared automatically on upload (normalisation and lightweight proxies). **Images** — JPEG, PNG, BMP, WebP, SVG, GIF, TIFF; vector graphics with no quality loss; fit/fill modes. **Documents** — PDF, DOCX, XLSX, PPTX, ODF, RTE, TXT, CSV; paging, zoom 100–1600 %, "whole page" / "fit width" modes, view state saved in the scene. **Carousel/playlist** — rotation of cameras, images and documents in one window at a set interval.

§ 05 – SECTION 3

Web content and applications

Web page — display sites, monitoring dashboards, HTML5 widgets and streaming video. Protocols HTTP, HTTPS, WebSocket; technologies HTML5, CSS, JavaScript, HLS/DASH in the player; navigation, mouse, keyboard, zoom, scroll. Additionally: auto-login with saved credentials, CSS injection, edge cropping, transparent background for overlay, auto-hiding of cookie banners, restoring address/zoom/scroll between sessions. **Video conferencing** — connect to Zoom, Microsoft Teams, Google Meet, Jitsi, TrueConf, Vinteo via web client or conferencing gateway.

§ 06 – SECTION 4

Capture and remote access

4.1 — USB / V4L2

USB cameras and V4L2-class capture cards. MJPEG, NV12, YUY2, BGRx; up to 4K.

4.2 — Pro SDI / HDMI

Blackmagic / DeckLink: SD/HD/3G/6G/12G-SDI, HDMI, up to 4K/8K, embedded audio.

4.3 — VNC

Remote PC screen with control. x11vnc, TightVNC, RealVNC, UltraVNC.

4.4 — RDP

Windows desktop: mouse, keyboard, clipboard; NLA / TLS.

4.5 — Application window A lightweight Windows/Linux agent streams an app window (workstation, GIS, SCADA) with input.	4.6 — Wireless display AirPlay, Miracast, Google Cast — show from phones and laptops, BYOD.
4.7 — DLNA / UPnP Media from network libraries (NAS, media servers) with browse and select.	4.8 — Spice / 4.9 — DVB VM consoles over SPICE; terrestrial/cable/satellite TV via DVB tuners.

§ 07 — SECTION 5

Surveillance and analytics

ONVIF — auto-discovery of IP cameras (profiles S/T/G/M): stream connection, PTZ and event reception with no manual URL setup. **VMS integration** — Macroscop, Trassir, AxxonSoft (Intellect), Milestone, Genetec, Hikvision, Dahua, Axis, Bosch: camera import, output of any channel, PTZ, alarm reception and auto-promotion of the alarm camera. **3D / LiDAR / point clouds** — visualisation of models and laser scanning for mapping and infrastructure monitoring.

5.3 — AI VIDEO ANALYTICS (ON THE GPU)

FUNCTION	PURPOSE
Object detection	people, vehicles, items — boxes and labels over video
Licence-plate recognition (ANPR)	vehicle plates, pass log
Face recognition	matching against a database, alert on a match
Perimeter control	line crossing, zone intrusion, abandoned objects
Counting and density	people/vehicle counters, crowd control
Workplace safety	helmets/vests (PPE), presence in a hazardous zone
Smoke and fire detection	early fire warning

Any analytics event can automatically raise an alarm and switch the wall scene.

§ 08 — SECTION 6

Widgets and telemetry

Display live data on the wall — sensor readings, controllers, ICS/IoT equipment and online services — as clear widgets next to the video. The video wall becomes a single dispatch screen: video streams + site telemetry.

WIDGET TYPES

Numeric readout · unit, colour zone
Analogue gauge with zones
Trend chart · parameter history

DATA PROTOCOLS

MQTT — IoT sensors and brokers (topics, QoS)
HTTP/REST — device and service APIs (JSON)
WebSocket — streaming updates

Linear / bar indicator	Modbus TCP/RTU — PLCs, ICS meters
Status indicator (traffic light)	OPC UA — industrial controllers, SCADA
Tag table "name — value — status"	SNMP — network gear, UPS, data centres
Mnemonic diagram (SVG mimic)	BACnet — building engineering systems
Text board / ticker	SQL — corporate databases and historians
Clock / date / weather	Internal wall telemetry: GPU, temp, network
Map / geo-markers	
News feed (RSS), market ticker	
Message feed, custom HTML	

Thresholds and reactions. Normal/warning/alarm zones with colour change; auto-switch the scene to an alarm preset, log writing and auto-return on normalisation.

§ 09 — SECTIONS 7-8

Video terminals SIP / H.323 and service sources

A built-in MCU gateway connects hardware video terminals (Cisco, Polycom and compatible) into a conference, mixed into a common mosaic. SIP (UDP/TCP) and H.323 (via built-in gatekeeper); video codecs H.264, H.265 (HEVC), VP8; audio Opus, G.722, G.711; resolution up to 1080p (standard room) / 4K (large), 30 fps. Dynamic layout change up to 5×5 without interruption, microphone control, active-speaker detection, conference recording. **Service sources** — diagnostic patterns (SMPTE bars, gradients, fractal, moving charts) for tuning and calibrating the video-wall paths.

§ 10 — SECTION 9

Outputs — display and broadcast

VIDEO WALL N×M	VALUE
Layout	N×M grid, free assignment of canvas areas to displays
Output modes	DRM/KMS (24/7 with no graphical environment) and X11
Display	up to 4K and beyond per monitor; rotation 0/90/180/270°
Bezels	automatic seam compensation
Sync	frame-accurate (VSync), exact rates (incl. NTSC)

LED panel control — Novastar, Megapixel, Brompton controllers over HTTP: power, brightness 0–100 %, test patterns, reboot, status polling. **Wall broadcast** — streaming to external systems over RTMP, SRT, WebRTC, HLS; H.264/H.265 codec, configurable resolution and bitrate. **Recording and playback (DVR)** — recording the wall and individual sources with segmentation, time-search archive; MP4/MKV, on schedule or on event.

§ 11 — SECTION 10

Platform capabilities

CAPABILITY	DESCRIPTION
Scenes and presets	saved layouts with smooth transitions, no black gaps
Scheduler	automatic scene switching on schedule (time of day, day of week)
Scenarios and automation	reactions to events (alarm, sensor signal, command) → action
Alarms	rules, log, auto-promotion of a source, auto-return
Multi-wall / cluster	several walls and servers under single control
Layout templates	ready grids 1×1, 2×2, 3×3, PiP, custom
Role-based access	users and roles, permission separation, action log (audit)
Open REST API	full control and integration with third-party systems
Preview / audio monitoring	real-time thumbnails, listening to a selected source
Resilience	health monitoring, self-healing, hot server standby
Classification and watermark	secrecy marking (confidential), timestamp
SSO / directory	Active Directory, LDAP, Keycloak (OIDC) — single sign-on
Telestrator	annotations over the wall: arrows, highlight, drawing
Mobile app	view and control the wall from a tablet/smartphone
Incident log / SOP	event logging and step-by-step action procedures
Webhooks / reports	forwarding events to external systems, snapshots and scheduled reports

§ 12 – SECTIONS 11-12

Window parameters and technical platform

GENERAL WINDOW PARAMETERS

Position and size — coordinates and dimensions on the canvas

Layer (z-order) — window stacking order

Opacity — from transparent to opaque

Scaling — fit / fill

Frame rate — target window rate

PLATFORM AND SPECIFICATIONS

Acceleration — NVIDIA GPU (decode, composition, analytics)

Pipeline — zero-copy (GPU-to-GPU)

Sources — up to 64 simultaneously

Mode — 24/7 with no operator, auto-recovery

Deployment — DRM/KMS or X11, clustering

Control — web interface, REST API, layout designer

CraftWall

A software platform for video wall management in situation centres, NOC, control rooms and mission-critical sites.

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