APPLICATION SERIES / 01

Sharp Vision for Airports



Follow the tug from entry to stand.

One video keeps the apron in context. Track-linked metadata records where each detected vehicle or cargo unit was and when the detail camera captured it. A reviewer can select the tug and follow its whole passage.

01 / ADVANCED MODE: TRACK-BASED RECORDING

One video. A history for each track.

The wide camera follows detected foreground subjects as they move. The output is a lower-resolution wide video plus metadata for each track: its position over time and the high-resolution optical images captured when attention revisits it.



WIDE VIDEO / illustrative review frame

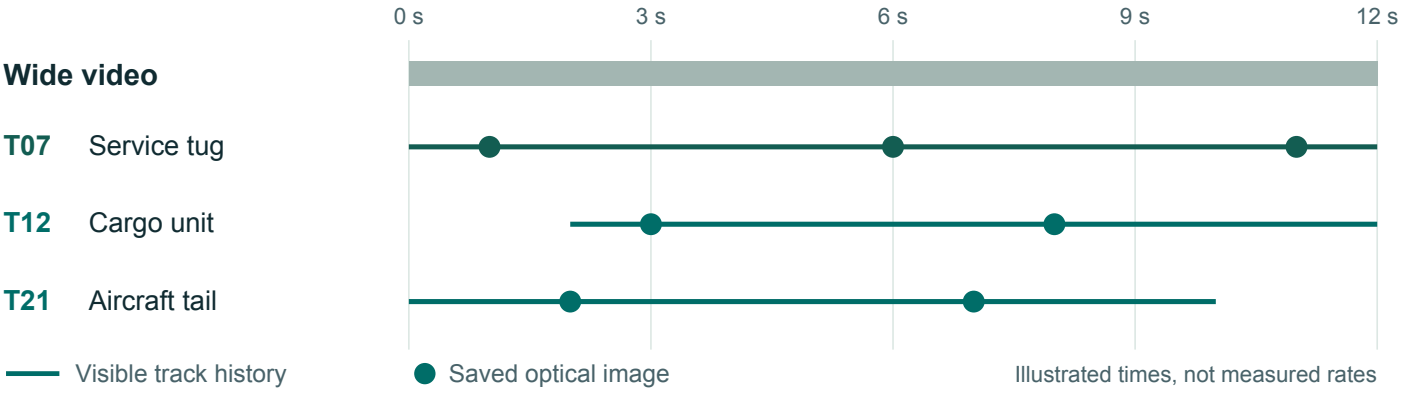
EACH TRACK RECORD

Track ID
Groups observations of one subject.

Position + time
Locates it in successive wide frames.

Linked optical images
Each keeps its own capture time.

WHAT IS SAVED DURING A 12-SECOND EXAMPLE



REPLAY AND EVIDENCE / SELECTED TRACK T07

0 s Apron entry **6 s Service lane** **12 s Stand edge**

Did the same tug reach the stand? Follow T07 on the wide video and inspect its optical samples for a visible fleet marking.

Vehicle-type detection or an authorised fleet-ID check can use a legible sample. The video shows the order of movements.



ORIGINAL REVIEW INTERFACE

Watch the recording review

Choose a time range, select a tracked subject and open or save its detail images. A track ID is not a verified identity; only captured detail is available.

Open Wamda's recording demo >

02 / INSIDE AN ATTENTION CYCLE

Watch the tug, not the tarmac.

As a tug nears the stand, it can earn repeat looks. A stationary cargo unit still has a saved image. The wide camera keeps the stand, aircraft and other traffic in view throughout.





T07 / Service tug
Last sample +0.4 s



T12 / Cargo unit
Last sample +0.2 s



T21 / Aircraft tail
Last sample +0.0 s

ONE DETAIL CHANNEL / FIVE EXAMPLE VISITS

+0.0 s	+0.1 s	+0.2 s	+0.3 s	+0.4 s
T21	T07	T12	T07	T07

The controller chooses a location; a fast-steering mirror directs the narrow sensor before exposure. These are optical samples, not AI-enlarged overview pixels.

Photo and times illustrate an attention policy, not footage of a deployment. The team's 10 actions/s is a shared rate, not 10 new close-ups/s for every subject.

Scene: Alexander Van Steenberge / Unsplash

Try the attention demo >

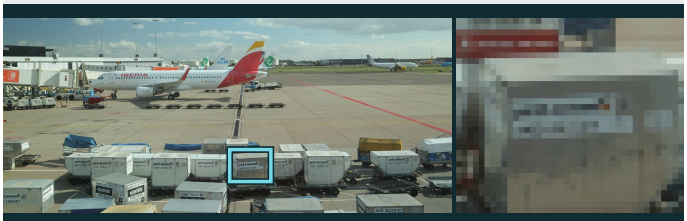
03 / SAME SCENE, FOUR RECORDING CHOICES

What would each camera keep?

Which tug served the stand, and which cargo units were beside it?

Each right-hand inset inspects the same cargo unit (T12).

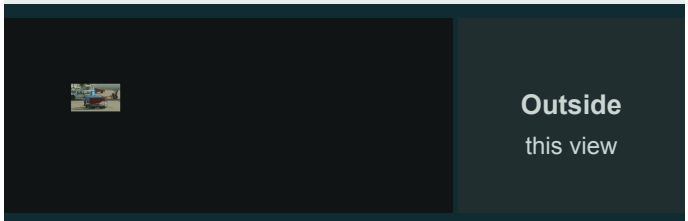
Fixed wide camera



SCENE FOOTPRINT — Digital crop

The tug and stand stay in view. A digital crop is limited to the tug pixels already recorded.

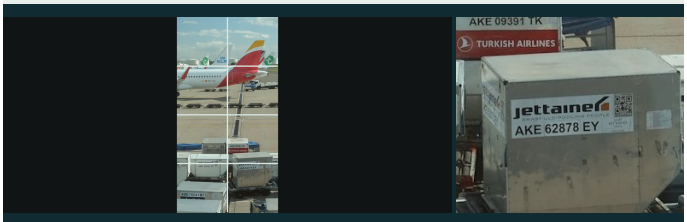
Zoomed PTZ



SCENE FOOTPRINT — Not recorded

Aim the zoom at the tug and the cargo row outside that view is not recorded at this instant.

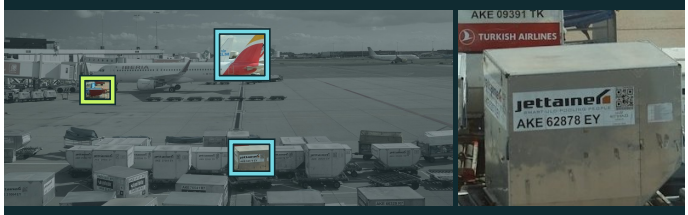
Fixed multifocal / 30°



SCENE FOOTPRINT — Fixed detail

The central sector keeps its detail continuously. The tug on the left falls outside this example unit.

Sharp Vision

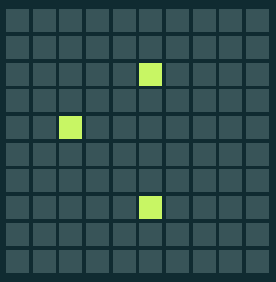


SCENE FOOTPRINT — Saved optical

Revisit the moving tug; retain the earlier cart and aircraft samples beside the wide stand record.

Illustrative zoom: digital crop reduced to 40 pixels across; saved optical uses the same crop at source detail.
Not a measured camera test. Black = outside the optical field; the 30° sector models one unit.

100 possible places to look



10 x 10 conceptual grid

A stand team needs detail when a tug arrives, not a close-up of every patch of tarmac throughout the turnaround.

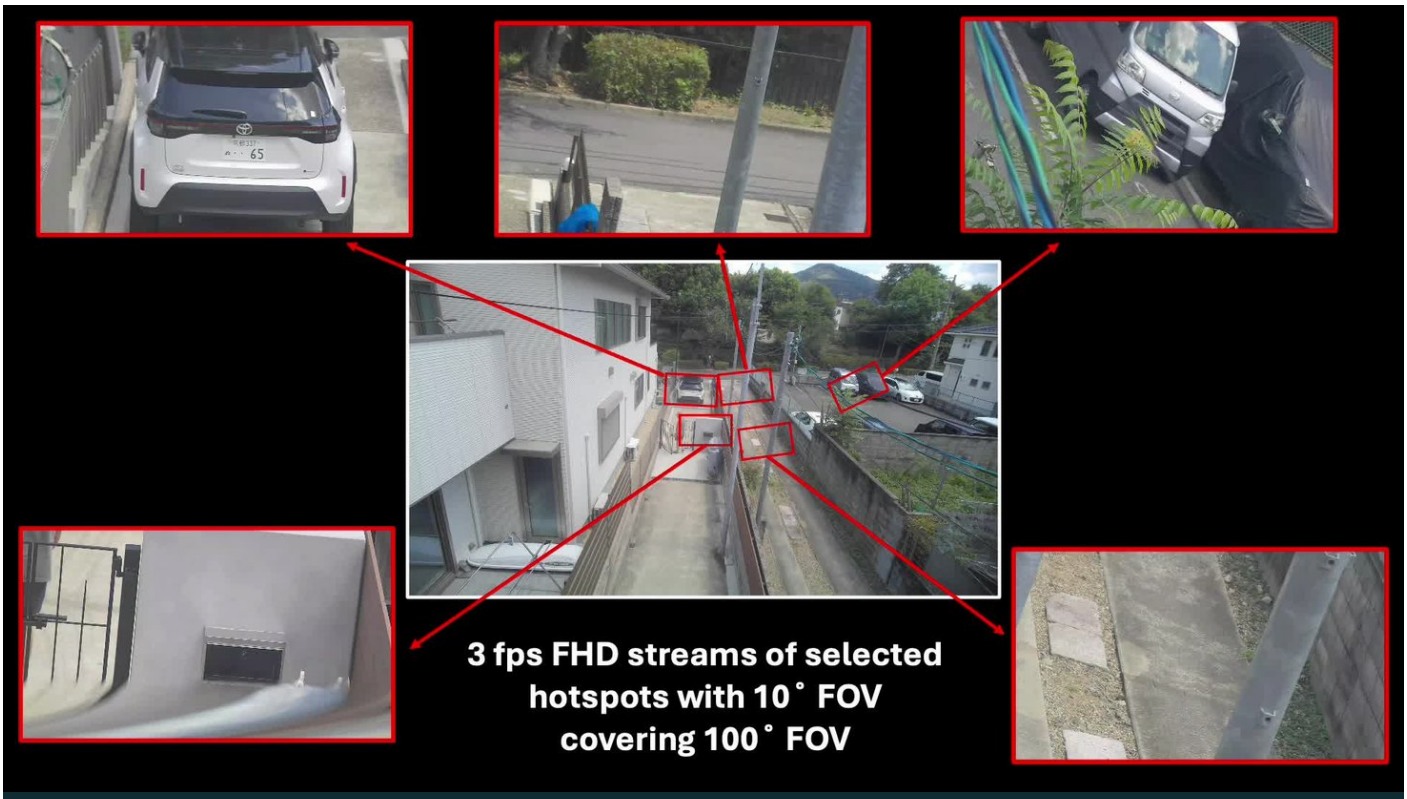
The grid represents candidate locations from one viewpoint, not 100 simultaneous camera feeds. Equivalence depends on getting the required detail in time; an unsampled event has only the wide recording.

Pilot measure: Compare the share of tug arrivals with a usable optical image and the gap between captures during each arrival.

04 / BASIC MODE: FIXED HOTSPOTS

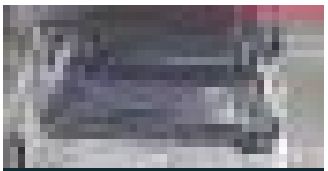
One wide view. Five optical hotspots.

This is a still from Wamda's original Sharp Vision recording. The middle image is the overview. The five surrounding images are focused views of the marked locations, not details generated from the middle image.



WAMDA AI / ORIGINAL HARDWARE DEMONSTRATION

The 3 fps FHD label applies to this hotspot recording, not to every track or site.



Enlarged overview



Optical hotspot

Same car, different captured detail

Look at the rear window. Enlarging the wide view does not reproduce the contours gathered by the narrow optical channel. Both crops are from the original demo frame.

Hotspot: revisit a place

Cargo staging, stand entrance and service lane

Track: revisit a subject

A tug entering or leaving the stand

Research basis: the team's ICLR 2018 workshop study tested visual hierarchies on gaze and digit tasks, not equivalence to a 100-camera installation.

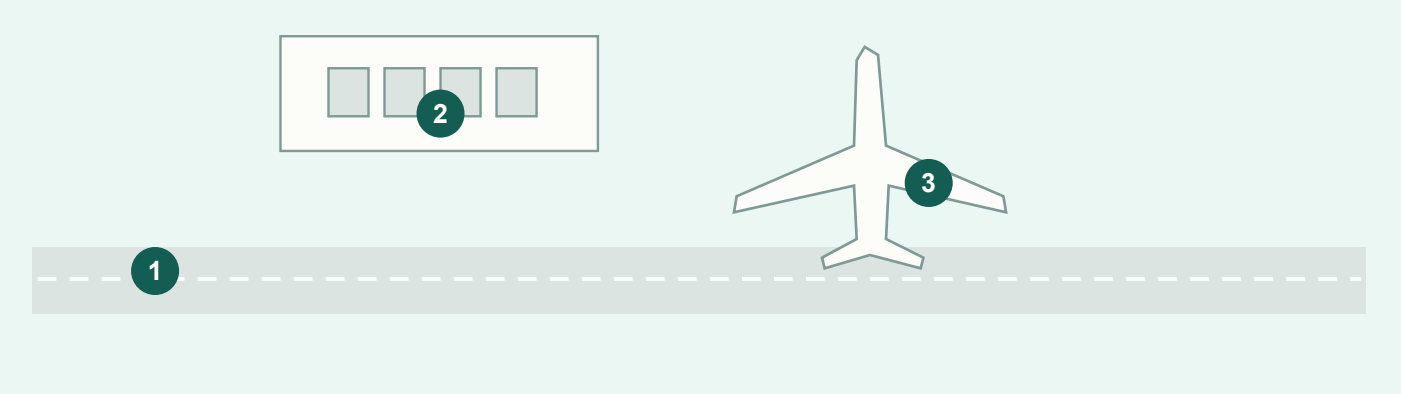
Watch the hardware recording >
Read the study >
Compare camera modes >

05 / OPERATIONAL QUESTIONS

From approach to departure

Example site layout

SCHEMATIC / NOT TO SCALE



1 Service road
2 Cart staging
3 Aircraft stand

01 Stand activity

Which service vehicle arrived first? Read the sequence in the overview, then open the available detail for the vehicle in question.

02 Baggage handling

Where did a cart wait before moving to the aircraft? Follow the visible route in the wide view and inspect selected captures near the stand.

03 Incident review

Was a vehicle stationary or moving when another passed? Use the continuous context for the sequence; a detail still supplies appearance, not continuous motion.

SCOPE OF USE

For operations review. Not a runway debris detector or a substitute for air traffic control.

06 / PLANNING A PILOT

Start with one stand and its service road



WAMDA AI / CAMERA PROTOTYPE

ORIGINAL SHARP VISION CONFIGURATION

100°
horizontal wide view

10°
horizontal optical detail window

Two sensors
wide context and directed detail

WHAT THE PROTOTYPE DEMONSTRATED

In a 30-minute daytime trial on a two-lane road, Wamda documented vehicle images at 10, 20, 40 and 80 metres. These were vehicle observations, not a guaranteed range for every subject, site or lighting condition.

WHAT TO CHECK ON YOUR SITE

1. Check vehicle detail at the near and far sides of the stand.
2. Measure how often the same tug is revisited during a busy turnaround.
3. Repeat in backlight and after dusk; verify what aircraft or equipment hides.

Selective detail can reduce bandwidth and storage

Planning example: two Full HD equivalents at 4 Mb/s each, plus 0.5 Mb/s for track data and stills, total 8.5 Mb/s, or about 2.75 TB per unit over 30 days. Encoding and capture frequency affect actual costs; backup storage is extra.

Explore the camera demo >

Discuss a site pilot >

Sector photo: Anthony Maw / Unsplash. Product image: Wamda AI.