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Distributed Audiovisual Production and the Evolution of Communication Methodologies for Large-Scale Cultural Events: A Case Study of the Festa Dos Tabuleiros

ABSTRACT

This paper examines how distributed audiovisual production can support the communication of large-scale cultural events through the case of the Festa dos Tabuleiros in Tomar, Portugal. It reconstructs the 2019 operation, which grew from a public-screen service into complete online coverage and signal sharing with local media. The study follows an exploratory qualitative single-case design and draws on planning records, public recordings, a control-room time-lapse, participant observation and YouTube analytics. The operation showed that an academic and institutional team could coordinate distributed acquisition and central production without relying on a conventional outside-broadcast structure. It also exposed a critical communication weakness: a short interruption ended the original streaming sessions, changed the audience entry points and left three unattended public screens outside editorial control. Replacement sessions attracted smaller audiences, although the late stage of the procession prevents that difference from being attributed solely to link discovery. From these observations, the paper proposes a 2027 model based on a non-public clean feed, independently produced partner programmes, an optional official programme and a dedicated silent, graphics-led service for public screens. The case suggests that distributed production should be treated not only as an engineering workflow, but as a communication process involving editorial alignment, audience continuity, platform choice, public information and preservation of audiovisual memory.

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KEY WORDS
Audiovisual communication, distributed audiovisual production, cultural heritage, media convergence, case study

1. Introduction

Large cultural events communicate shared history, identity and practice as well as bringing people together. Professional live coverage traditionally depended on broadcasters controlling equipment, editorial choices and distribution (Briggs, Burke & Ytreberg, 2020). Although this can provide national visibility, cultural organisations remain dependent on external decisions about availability, news value and programme time.

Digital convergence, networked media and mediatisation now allow live content to be produced and distributed across platforms (Jenkins, 2006; Castells, 2010; Couldry & Hepp, 2017).

Distributed audiovisual production links acquisition, production and distribution resources in different locations within one workflow (Calverley, 2018). Its engineering foundations are established, but its implications for cultural-event communication require closer attention.

Here, communication methodology covers how audiovisual coverage is planned, produced, distributed and accessed, including the decisions that determine what audiences can find, see and understand.

1.1. The Festa dos Tabuleiros communication context

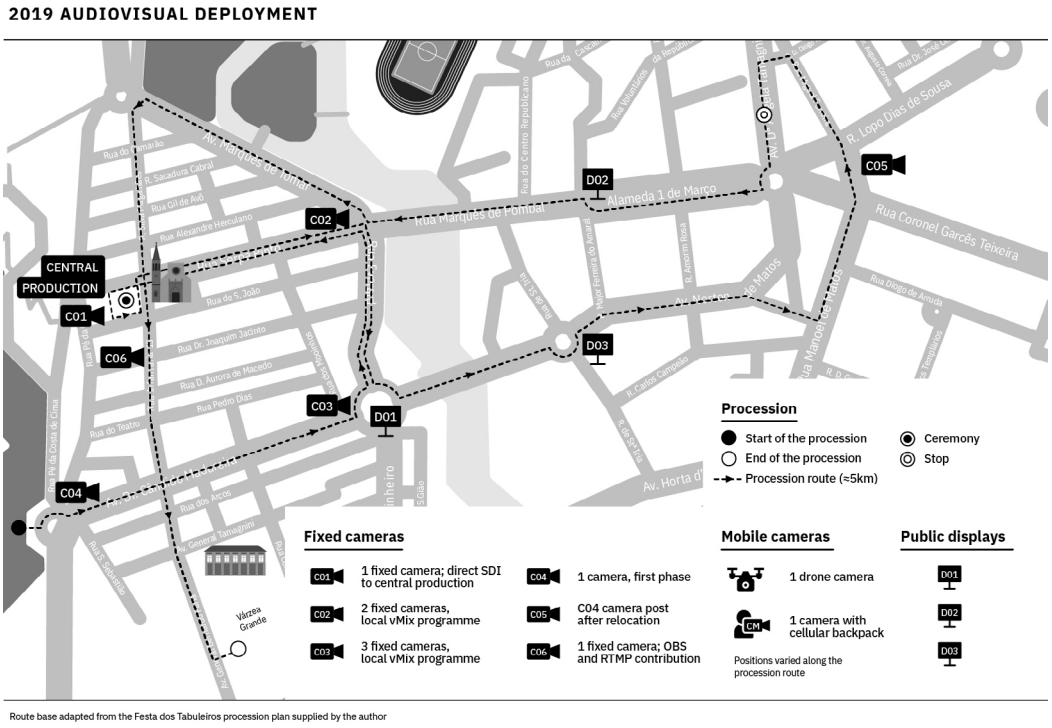
The Festa dos Tabuleiros is a major cultural and religious celebration held every four years in Tomar, Portugal. Its principal public moment is the Cortejo dos Tabuleiros, or Grande Cortejo, in which hundreds of decorated ceremonial structures known locally as *tabuleiros* are carried through the city (Municipality of Tomar, n.d.; RTP/Lusa, 2019). Its scale, duration and symbolic importance make audiovisual coverage both a complex production operation and a form of cultural mediation.

In 2019, approximately 750 *tabuleiros* followed a route of about five kilometres (RTP/Lusa, 2019). No spectator could observe the whole procession from one position. Coverage therefore served distant viewers while helping people in Tomar understand what was happening elsewhere along the route.

Dedicated coverage can prioritise the Festa, widen access and preserve an audiovisual record without imitating a national television programme. Figure 1 illustrates the spatial challenge and Figure 2 illustrates the Grande Cortejo route.



» **Figure 1:** *Spatial extension, participant density and public occupation along the route of the Grande Cortejo of the Festa dos Tabuleiros in 2023. Photographs: Luis Ribeiro (www.luis-ribeiro.pt; Instagram: @lluisrribeiro.fotografia). Reproduced with permission.*



» **Figure 2:** *Spatial reconstruction of the 2019 audiovisual operation, showing the Grande Cortejo route, three public displays (D01–D03), fixed cameras (C01–C06), mobile cameras and central production. C04 and C05 identify the same camera post before and after relocation. Route and locations are schematic; not to scale.*

1.2. Audiovisual communication for cultural heritage and distribution

Communicating living heritage involves more than visibility. UNESCO encourages specialised audiovisual programmes that communicate intangible heritage to the communities concerned rather than present it only as entertainment (UNESCO, 2024). Dedicated coverage should therefore keep the Festa, its people and cultural meaning at the centre.

Audiovisual heritage research connects production, documentation, dissemination and long-term access (Dimoulas et al., 2014; Rossi, 2024), while social-media research relates cultural content to audience understanding (Zhang & Xu, 2024). Institutional coordination, metadata, legal conditions and usable access remain essential (Hauttekeete et al., 2011; Ongena, Huizer & Van de Wijngaert, 2012).

It is also useful to distinguish how the signal travels. In professional terminology, contribution carries audiovisual material to a production centre for further processing, whereas distribution carries a finished programme to viewers (ITU-T, 2022).

This difference is central to the model proposed here. The clean feed is a contribution source from which authorised organisations can build their own programmes; it is not intended as a public stream. The public screens are a separate distribution service because people view them without sound, in shared outdoor spaces and under conditions that require a purpose-built visual output.

1.3. Platform dependence and situated visual communication

Online platforms simplify distribution while shifting control over infrastructure, governance, data and visibility (Nieborg, Duffy & Poell, 2020; Siciliano, 2022; Idiz & Poell, 2025). The 2019 case demonstrates a narrower operational dependence: one public YouTube session served both as audience entry point and source for unattended displays. When it ended, viewers needed a new URL and the display computers could not be redirected because no operators were present; unrelated platform content was later found on the screens. YouTube remains a practical outlet for a final online programme, but it should not carry the dedicated public-screen service. The proposed model separates the two distribution paths.

Table 1

Focused mapping of research strands relevant to the proposed communication model

Reference	Main research object	Technology and operations	Communication and audience	Limitation relative to this study
Calverley (2018)	Time-compensated remote production over IP	Primary	Not central	Does not address cultural-event communication or distinct public outputs.
Kawamoto et al. (2021)	Network configuration and delay in remote professional production	Primary	Not central	Evaluates production performance rather than audience access or editorial control.
Oh, Kim & Lee (2024)	Cloud-based live-media production platform	Primary	Limited	Demonstrates a production platform without an event-centred communication model.
Dimoulas et al. (2014)	Production, archiving and cross-media publication for folkloric heritage	Secondary	Primary	Connects media production and heritage but not live multi-output public-screen delivery.
Zhang & Xu (2024)	Cultural-heritage communication through social media	Not central	Primary	Addresses online meaning and audience understanding rather than live production architecture.
Nieborg, Duffy & Poell (2020)	Platforms and cultural production	Secondary	Primary	Explains platform dependence without specifying an event-distribution workflow.
Ducros et al. (2024)	Event-centric public displays	Secondary	Primary	Addresses situated displays without integrating a live contribution and programme ecosystem.

Note: The authors coded each source from its stated aims, abstract and reported contribution. 'Primary' identifies a principal object of the source; 'Secondary' indicates substantive but non-primary treatment; 'Limited' indicates brief or partial treatment; and 'Not central' means that the dimension falls outside the source's main analytical focus.

Large outdoor LED screens are situated media, not domestic television receivers. Public-space broadcasting links media, place and collective viewing (McQuire, 2010); event-centred displays connect content, event, interaction and display (Ducros et al., 2024); and experiential graphic design integrates information, spatial context and user experience (Petković, Pasanec Preprotić & Kozjan Cindrić, 2025). Display blindness makes immediate relevance essential (Müller et al., 2009). Pixel pitch affects minimum viewing distance (Motlagh & Hashemi, 2010), while standard metrology addresses luminance, uniformity, viewing angle and ambient contrast (ICDM, 2025). These findings support a dedicated silent output designed for rapid comprehension under actual viewing conditions.

2. Research Gap, Aim and Research Question

Relevant research is divided among remote production, cultural media, and platform or public-display studies (Dimoulas et al., 2014; Calverley, 2018; Nieborg, Duffy & Poell, 2020; Kawamoto et al., 2021; Oh, Kim & Lee, 2024; Zhang & Xu, 2024; Ducros et al., 2024). Table 1 maps seven representative works purposively selected from the broader review. It clarifies the intersection addressed here but does not claim systematic coverage. The gap lies at their intersection: none of the mapped sources derives from a documented large cultural procession a model combining a common contribution signal, independent public programmes and a dedicated silent screen service.

We ask: how can the lessons from the 2019 audiovisual operation inform a 2027 model that widens access to the Festa dos Tabuleiros and improves viewing online and on public screens? The objective is to translate documented gaps into collaborative production and distinct public outputs. A parallel engineering study evaluates acquisition, transport and continuity; this paper defines the communication model and functional requirements without prescribing final protocols.

3. Methodology

We use an exploratory qualitative single-case study (Yin, 2018) to examine the 2019 audiovisual operation and develop requirements for a future communication model. The case is treated as a bounded production and distribution system involving image capture, signal transport, online publication, partner-channel use and public-screen display.

3.1. Retrospective case reconstruction

The 2019 project addressed an immediate need and was not a controlled experiment: no comparison, audience survey or indicators were defined in advance. The retrospective reconstruction supports future requirements but cannot establish audience causality or superiority over another model.

The first author helped design and operate the system, providing first-hand knowledge but creating retrospective-bias risk.

Table 2

Evidence categories and limits used in the retrospective case reconstruction

Evidence	Use in this paper	Limit
Contemporaneous project and master's research records	Architecture, operational context and original requirements	Internal documentation is not publicly accessible and lacks several measurements required for retrospective analysis
Unpublished internal technical report Solução de Transmissão da Festa dos Tabuleiros 2019 [Festa dos Tabuleiros 2019 Transmission Solution], prepared from project components subsequently presented in the Multimedia Authoring curricular unit at the School of Technology of Abrantes (ESTA), Polytechnic Institute of Tomar (July 2019)	Contemporary description of workflow and operational incidents	Not publicly available and not a formal system log
Broadcast recordings and control-room time-lapse	Visual sequence, outputs and observable disruption	Do not establish root cause
YouTube pages and analytics exports	Cumulative reach and concurrent-viewer patterns	Incomplete across all channels
Participant account	Intent, decisions, timing and recovery actions	Retrospective and potentially affected by recall

Recollections were checked, where possible, against archived streams, analytics, the July 2019 student report and retained technical material. Uncorroborated claims remain identified as recollections or interpretations.

3.2. Evidence and claim classification

Table 2 distinguishes documented evidence, participant knowledge and future proposals. Claims are classified as verified, observed, inferred or proposed according to their evidential support.

3.3. Analytical procedure

The reconstruction described the 2019 workflow, identified incidents and communication gaps, examined audience exports from both YouTube channels, and translated the findings into 2027 requirements.

Each documented limitation was linked to a communication consequence and future requirement. The result is a prospective framework, not a validated model; metrics and success criteria must be defined before deployment.

The public-screen component is conceptual. It was co-developed from the case and relevant design research, with the communication-design coauthor shaping its information structure and graphic logic. Design review and field testing must assess hierarchy, typography, contrast, timing, cross-screen consistency and outdoor legibility.

The unit of analysis is the complete communication service: acquisition, production, platform session, audience entry point, partner reuse and public screens. Production, session, audience-access and public-presentation continuity are analysed separately because signal recovery does not necessarily restore the viewer service.

4. Results and Discussion

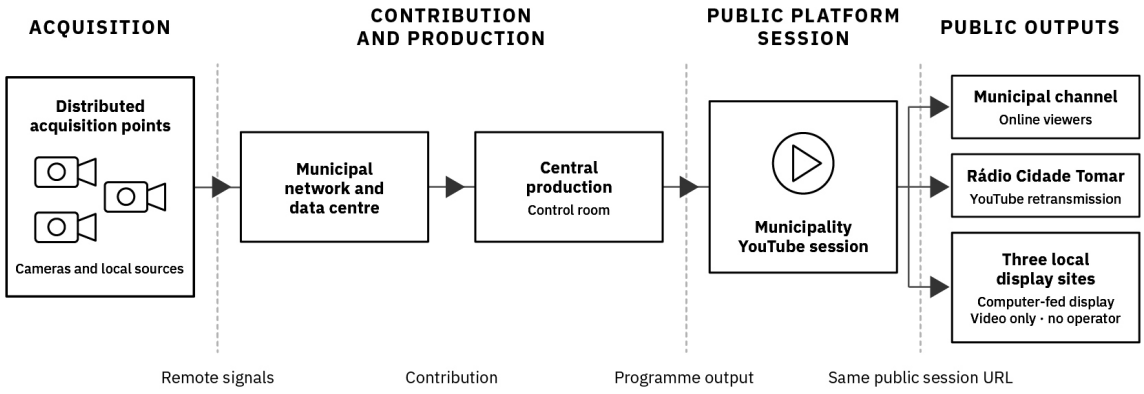
The 2019 operation demonstrates the feasibility of an academic–municipal distributed production using shared equipment and a largely pro bono team. Without a predefined benchmark, its quality and reach cannot be compared with another model.

It also exposed weaknesses in platform dependence, session continuity, screen control and advance communication that shaped the 2027 requirements.

4.1. The 2019 implementation

The project began with a limited aim: carrying live video to public screens placed around the city. About one month before the event, the plan expanded to include complete live coverage of the procession, a new municipal YouTube presence and access to the programme signal for local media. Rádio Cidade de Tomar used that signal. It was also offered to Rádio Hertz, although the records available for this study do not confirm that Rádio Hertz retransmitted it.

There was no dedicated production budget. Institutional partners supplied equipment and infrastructure, while lecturers and students contributed pro bono. The extracurricular team involved Informatics and Multimedia Technologies and TV Direction and Production students from the School of Technology of Abrantes (ESTA), and Multimedia Design and Graphic Arts Technologies students from the School of Technology of Tomar (ESTT), both then part of the Polytechnic Institute of Tomar. These constraints shaped pragmatic decisions; low cost is not the main contribution. Because the procession crossed much of the city, the programme used a distributed multicamera workflow.



» **Figure 3:** *Functional architecture of the 2019 operation, connecting distributed acquisition points, the municipal network and data centre, central production, the Municipality YouTube session, the municipal channel, the Rádio Cidade de Tomar retransmission and the three unattended local display sites.*

Figure 3 summarises its acquisition points, municipal network and data centre, central production, Municipality YouTube session, municipal channel, Rádio Cidade de Tomar retransmission and three display sites. Equipment specifications are outside this paper's scope.

4.2. Distribution and available audience evidence

Table 3 reports YouTube exports to 7 September 2026 for two municipal sessions and two corresponding Rádio Cidade de Tomar retransmissions. Views combine live and later access, are not unique spectators and may overlap across sessions or channels.

On the event date, replacement-session views were 14.7% of the first municipal session and 15.0% of the first Rádio Cidade session. The similar pattern across independent outlets is not a causal estimate of loss: the interruption occurred late, after the main ceremonial moments, leaving less programme and potentially less interest.

The recordings continued circulating after 2019. Listed foreign-country views were at least 605 across twelve countries for the first municipal session, 60 across three for its replacement, 816 across ten for the first Rádio Cidade session and 45 across two for its replacement. These are lower bounds, and country of access does not establish nationality, residence or diaspora membership.

Table 4 and Figure 4 show partial audience rebuilding on Rádio Cidade de Tomar: the replacement began with 17 concurrent viewers (8.3% of the previous session's final 206), reached 52 after five minutes and peaked at 81. These are not individual-retention data, and the late timing prevents attribution solely to the new link.

Table 3

YouTube audience indicators for the four public sessions (publication to 7 September 2026)

Channel and session	Views	Watch time	Average view duration	Views on event date
Municipality – first	9,020	2,203.76 h	14 min 39 s	7,331
Municipality – replacement	1,964	169.03 h	5 min 09 s	1,074
Rádio Cidade – first	10,837	1,573.36 h	8 min 42 s	4,373
Rádio Cidade – replacement	1,709	91.81 h	3 min 13 s	657

Note: Views combine live and on-demand consumption and are not unique-viewer counts. One person may have accessed more than one session or channel. Source: YouTube Analytics exports supplied by the respective channel owners

Table 4

Rádio Cidade de Tomar concurrent-audience indicators from minute-sampled YouTube Analytics exports

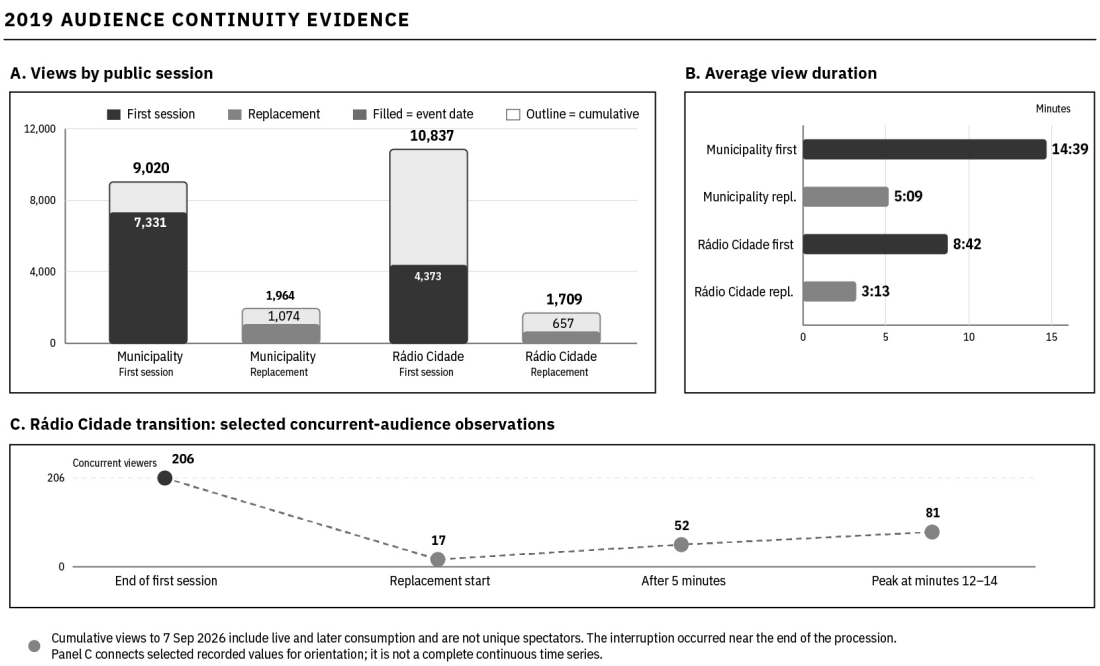
Rádio Cidade de Tomar indicator	First session	Replacement session
Recorded duration	3 h 16 min	27 min
Peak concurrent viewers	387	81
Final recorded audience	206	60
Initial recorded audience	0 before activity	17
Simple mean of minute samples	239.2	62.1
Chat messages	47	1

Note: The simple mean describes the available minute samples and is not a time-weighted audience estimate. Concurrent-viewer data were available only for the Rádio Cidade de Tomar sessions. Source: YouTube Analytics exports supplied by Rádio Cidade de Tomar.

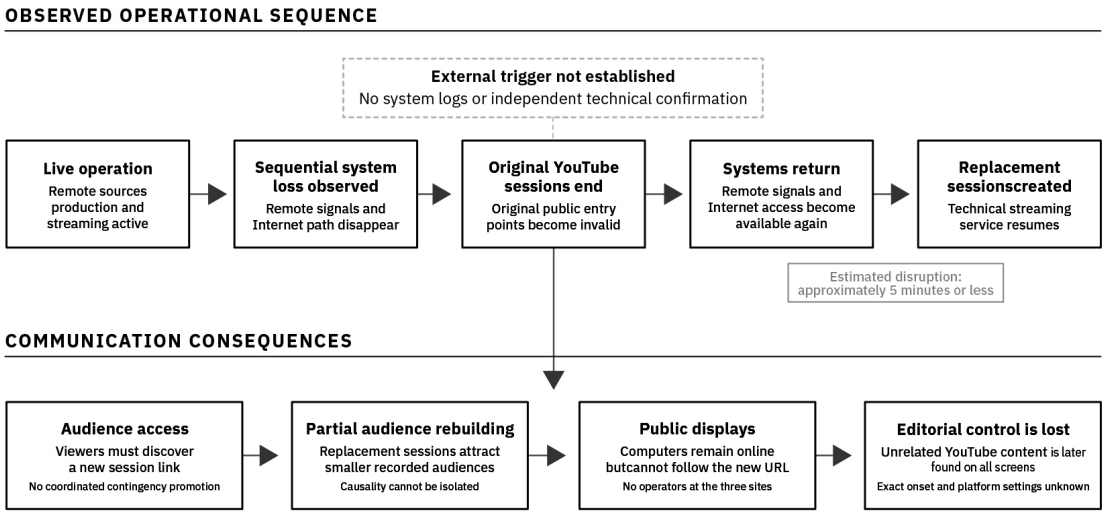
4.3. Interruption and recovery

The team observed municipal data-centre systems become unavailable in sequence, followed by the contribution signals and Internet path; these later returned. Without logs or independent confirmation, the external trigger is unknown. The established production failure was the absence of redundant contribution and distribution paths, for which the production team accepts responsibility. The team created a replacement YouTube session.

The operator estimated recovery in five minutes or less; the control-room time-lapse indicates about four minutes and forty seconds if the remembered 15-second capture interval is correct. This supports an approximate, not certified, five-minute disruption. Production resumed through a new, unannounced public link near the end of the procession. Production, session and audience recovery therefore differed; audience recovery also depended on the limited event time and editorial value remaining. Figure 5 separates the unknown trigger from the observed consequences and the missing redundancy.



» **Figure 4:** *Audience evidence associated with the 2019 session interruption. Views and average view duration cover the four public sessions; concurrent-audience observations are available only for the Rádio Cidade de Tomar transition.*



» **Figure 5:** *Observed interruption and communication consequences in 2019. The external trigger is unknown; missing redundancy is identified as a production-design failure.*

4.4. Consequences for the public screens

The public displays were installed at three locations selected because they were expected to concentrate large numbers of spectators: Rotunda Grande, opposite Casa dos Cubos; the end of Alameda 1 de Março, opposite the Parish Council of Santa Maria dos Olivais; and the existing public screen near the Tomar fire station, as shown in Figure 2. Each location used an independent computer with wired Internet access provided locally by Casa dos Cubos, the Parish Council or the fire station. The computer reproduced the YouTube session and delivered video to the processor of the corresponding display. The displays received no audio. The screens arrived two days before the procession, within a one-month preparation period and without budget or local operators. Relaying YouTube was then workable, but every screen depended on one public URL and manual redirection.

The display computers remained online but did not follow the replacement session; changing the URL required an unavailable local operator. All three screens later showed unrelated YouTube material. Recommendation or autoplay is plausible, but the settings and onset cannot be verified.

The incident demonstrates operational platform dependence: connectivity remained, but editorial control and service continuity did not.

YouTube can distribute the online programme, but should not be the control path for unattended displays.

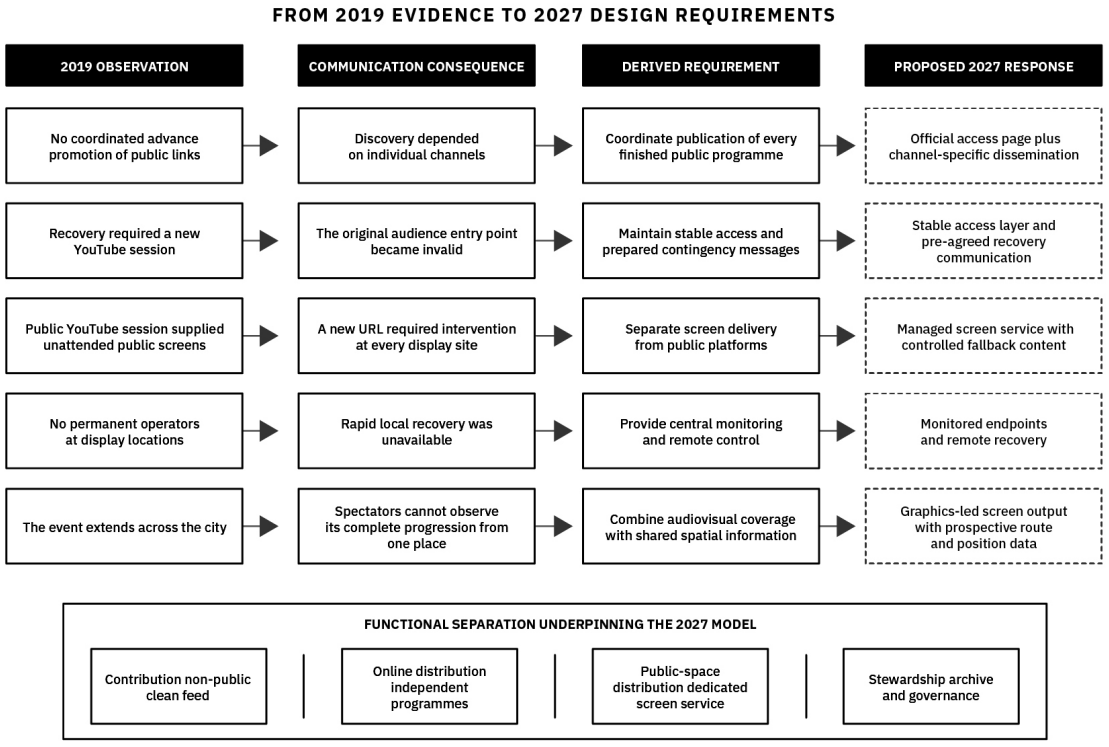
4.5. Communication lessons from the case

Table 5 translates the documented limitations into communication consequences, future requirements and indicators. Figure 6 connects the evidence-based observations and consequences to prospective, unvalidated 2027 responses.

Table 5

Communication requirements derived from documented observations of the 2019 operation

2019 observation	Communication consequence	2027 requirement	Prospective indicator
The public link was not promoted through a coordinated advance strategy	Audience discovery depended on individual channels	Plan and coordinate publication of every final programme link	Reach by channel and access source
Recovery required a new YouTube session	The original audience entry point became invalid	Use a stable public access layer and pre-agreed recovery communication	Time to restore a valid public entry point
Screens reproduced the public YouTube session	A new URL required intervention at every site	Use a managed public-screen service independent of public-platform URLs, with controlled fallback content	Screen-service availability
No permanent screen operators were available	Local recovery could not be performed rapidly	Provide monitored endpoints, central supervision and remote recovery	Detection and remote-recovery time
The event extends across the city	Audiences cannot observe its complete progression from one place	Combine audiovisual coverage with shared spatial information	Location-data latency and accuracy



» **Figure 6:** *Evidence-to-design synthesis linking documented 2019 limitations and communication consequences to derived requirements and proposed components of the 2027 model. Dashed boxes represent prospective responses, not validated outcomes.*

4.6. Proposed communication model for 2027

Figure 7 separates a continuous clean feed, partner and optional official programmes, dedicated screen production, public channels and a shared display service. This paper defines their communication functions rather than selecting cameras, codecs or transport protocols. A parallel engineering study will compare links by latency, resilience, bandwidth, monitoring, interoperability and recovery; remote-production research supports system-level evaluation rather than inference from protocol labels (Kawamoto et al., 2021).

4.6.1. The clean feed as a professional contribution signal

A central team would produce a continuous clean feed of the full procession, combining selected images with ambient sound as a professional contribution source, not a public stream.

The feed still requires editorial choices that preserve spatial continuity and principal moments, but excludes channel-specific commentary, branding, advertising and studio material, which recipients may add independently.

4.6.2. Independent programmes and editorial responsibility

Authorised media organisations could combine the feed with presenters, interviews, reports or commentary while retaining responsibility for their editorial decisions and public links.

The Municipality or Festa Commission could similarly produce an official programme centred on the Festa and Tomar. YouTube is the most feasible current outlet; cable distribution would require a partnership.

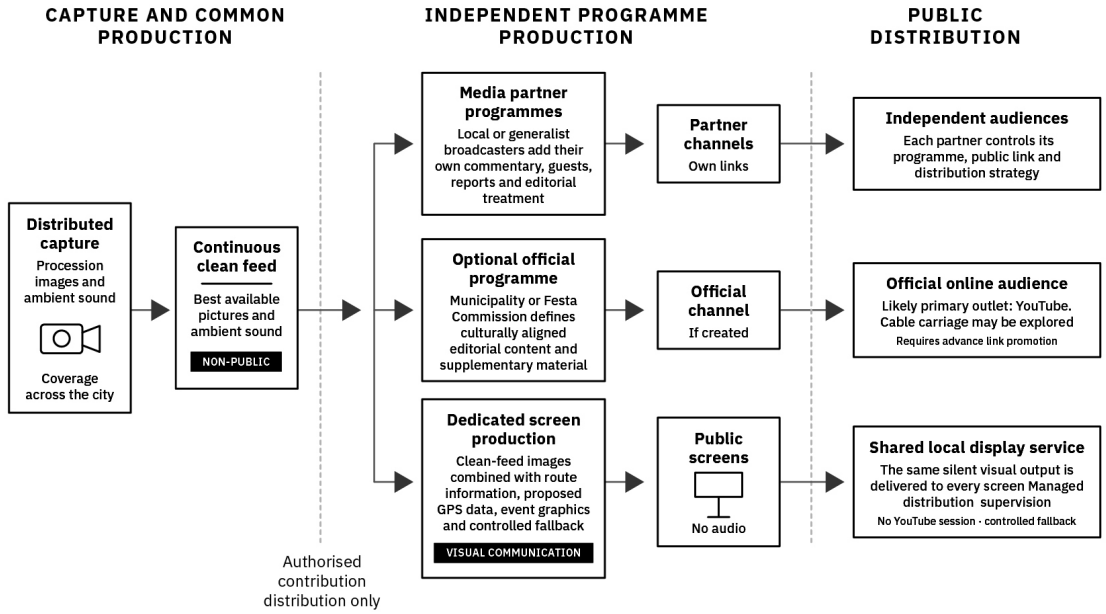
4.6.3. A dedicated visual programme for public screens

Outdoor LED screens require dedicated production, not simple reproduction of the clean feed. Because they have no sound, essential information must work visually at the installed size, distance and conditions.

Figure 8 organises the screen model into information inputs, editorial control, graphic composition, managed delivery and public screens, consistent with event-centred display research (Ducros et al., 2024).

Inputs include the clean feed, route, messages and prospective GPS procession-position data. Editorial control prioritises immediate utility; composition combines live video, identity, orientation and operational information. Brief attention and display blindness require few competing elements (Müller et al., 2009; Ducros et al., 2024). Managed delivery supplies one monitored output and fallback state. This unvalidated design must be tested at the intended sites.

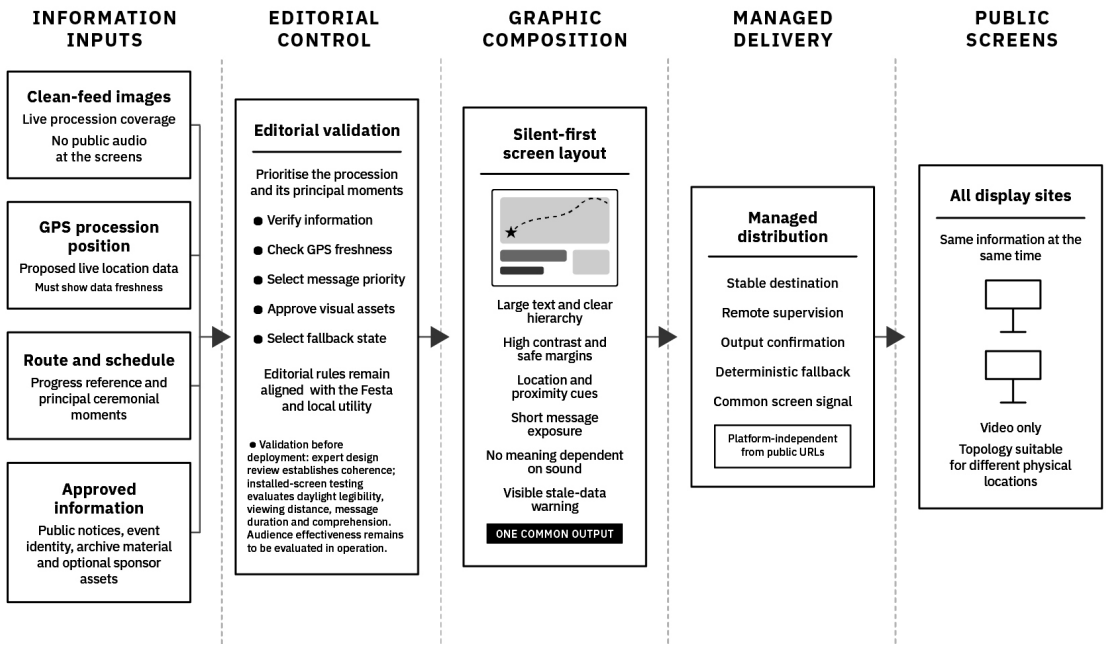
The shared display service would provide consistent content while allowing scheduling within a common information structure (Taniguchi, 2018). Live images remain dominant; persistent elements are limited to event identity, transmission status and procession progress, with safety messages taking priority.



» **Figure 7:** *Proposed 2027 multi-output communication model. A non-public continuous clean feed supports media-partner programmes, an optional official programme and dedicated screen production delivered through a shared local display service.*

Separating screen delivery from YouTube restores control over a silent, glanceable service. Sunlight and reflections reduce contrast, while luminance and tone mapping can improve readability (Qian et al., 2024); procurement must therefore consider measured ambient-light performance, not only resolution or dark-room contrast (ICDM, 2025). Table 6 proposes preliminary requirements. Its 5,000 cd/m² daytime value is an author-defined starting specification, not a universal or validated threshold.

Supplier documentation, site survey and acceptance tests must confirm these prospective requirements using the final graphics and recorded viewing conditions. A proposed GPS marker would indicate a predefined reference element within the procession, not the camera or subject currently shown. Coordinates would be matched to the route, with no assumed correspondence to the selected shot. This unimplemented capability requires tests of reference choice, update interval, latency, accuracy, stale-data indication and fallback.



» **Figure 8:** *Conceptual information and graphics model for public screens, separating information inputs, editorial validation, silent-first graphic composition, managed delivery and common display output*

Table 6

Preliminary minimum procurement or rental requirements for the 2027 public LED screens

Characteristic	Preliminary minimum requirement	Status or verification
Display and deployment	Direct-view LED equipment specified and certified for temporary outdoor use.	Confirms suitability for public-space operation.
Daytime luminance	At least 5,000 cd/m² sustained nominal luminance for screens exposed to direct daylight.	Provisional author specification; verify after installation.
Brightness control	Manual adjustment and preferably automatic control using ambient-light sensing.	Maintains visibility without unnecessary brightness in shade or lower light.
Ambient-light performance	Measure luminance, uniformity, surface reflection and ambient contrast under representative sun and shade.	Use established display-metrology procedures (ICDM, 2025).
Pixel pitch	Select from the minimum and maximum intended viewing distances at each site.	No single pitch is prescribed before the site survey (Motlagh & Hashemi, 2010).
Viewing validation	Test the final graphics at the intended distances and horizontal and vertical viewing angles.	Confirms that essential information remains legible in its actual context.
Continuity and control	Remote status monitoring, controlled fallback content and delivery independent of a public platform URL.	Prevents uncontrolled content and supports recovery without a permanent local operator.
Environmental protection	Supplier-certified protection appropriate to rain, dust, wind and the expected temperature range.	Final ratings depend on the installation and local risk assessment.

4.6.4. Link dissemination and contingency communication

Promotion should concern finished public programmes, not the clean feed. Each channel maintains its link and strategy, while the Municipality or Festa Commission provides a coordinated page of authorised outputs.

Audiences include distant viewers, residents monitoring progress before approaching the route, and spectators seeking events elsewhere in the city. Online and screen programmes may share data and assets, but serve different viewing situations and audio conditions.

4.6.5. Governance, partnerships and archive

The organising bodies would decide clean-feed access case by case through funding, sponsorship or agreed promotion. Ownership and archival rights remain with the Festa Commission or Municipality, as agreed between them.

Before procurement, the Festa Commission and Municipality should assign ownership, finance, operation, partner access, publication, monitoring, recovery and archival delivery. The provider should retain no exploitation rights, while each receiving channel remains editorially responsible. These are prospective governance requirements; the case supports neither a cost estimate nor contractual wording.

After testing, the infrastructure could cover the shorter *Cortejo dos Rapazes and Cortejo do Bodo*, supporting operational validation and the archive. Children's events require all applicable legal, consent and safeguarding measures.

4.6.6. Prospective evaluation framework

Evaluation must cover the complete service: technical continuity, discoverability, comprehension and the ability to follow the procession across outputs.

This end-to-end approach follows ITU-T guidance on user-centred quality and multi-point service monitoring (ITU-T, 2008a; ITU-T, 2008b), without importing managed-IPTV numerical targets.

Post-event content analysis should verify coverage of principal moments, procession prominence and the relevance of supplementary segments. Before deployment, documented design review should assess hierarchy, legibility, consistency, accessibility, contextual relevance, separation of advertising and performance under representative outdoor conditions.

Audience effectiveness requires representative-user tests across distances, angles and light levels. Measures should include task completion, comprehension, reading time, perceived clarity and essential-information visibility, alongside luminance, ambient illuminance and viewing position.

These prospective indicators are not 2019 results. Defining them before implementation creates a baseline for later assessment and publication.

4.7. Communication methodology and engineering relevance

The engineering relevance lies in separating contribution, editorial production, public distribution, screen delivery and archiving, which were coupled in 2019. Cloud architectures can centralize monitoring and switching (Oh, Kim & Lee, 2024), but cloud deployment remains a possible direction rather than a selection made here.

Communication remains central: the service must preserve culturally attentive coverage, practical information, discoverability, independent programmes and the institutional archive.

The parallel engineering study will test how these requirements can be delivered under event conditions; communication defines the required capabilities, and engineering validates their implementation.

5. Conclusions

The case demonstrates that a local cultural organisation and academic partner could produce and share distributed live coverage without a conventional outside-broadcast production.

It establishes feasibility in this context, not technical superiority, equivalent quality or comparative cost. As an exploratory single case involving the first author, it supports analytical rather than statistical generalisation.

The interruption showed that signal recovery alone does not restore audience access or screen control. Replacement sessions attracted smaller audiences, but the late timing prevents causal attribution solely to link discovery. Production, session, audience and public-presentation continuity must therefore be planned as connected but distinct problems.

For 2027, the proposed clean feed, independent programmes, silent screen service, coordinated links and institutional archive remain unvalidated. The model converts the 2019 lessons into a transferable pre-implementation process and baseline against which a later technical system and its communication outcomes can be evaluated.

6. Data availability

The four public recordings were available on the Municipality of Tomar and Rádio Cidade de Tomar YouTube channels at analysis: municipal first (https://www.youtube.com/watch?v=mFyE7eld2M4) and replacement (https://www.youtube.com/watch?v=b448RhMkgjg), and Rádio Cidade first (https://www.youtube.com/watch?v=ckPtf8nRQ68) and replacement (https://www.youtube.com/watch?v=dEwHIKzB5lw). Channel owners supplied aggregated analytics reproduced in Tables 3 and 4. Project records and the internal technical report are not public and are not the sole support for audience results or the interruption sequence.

7. References

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