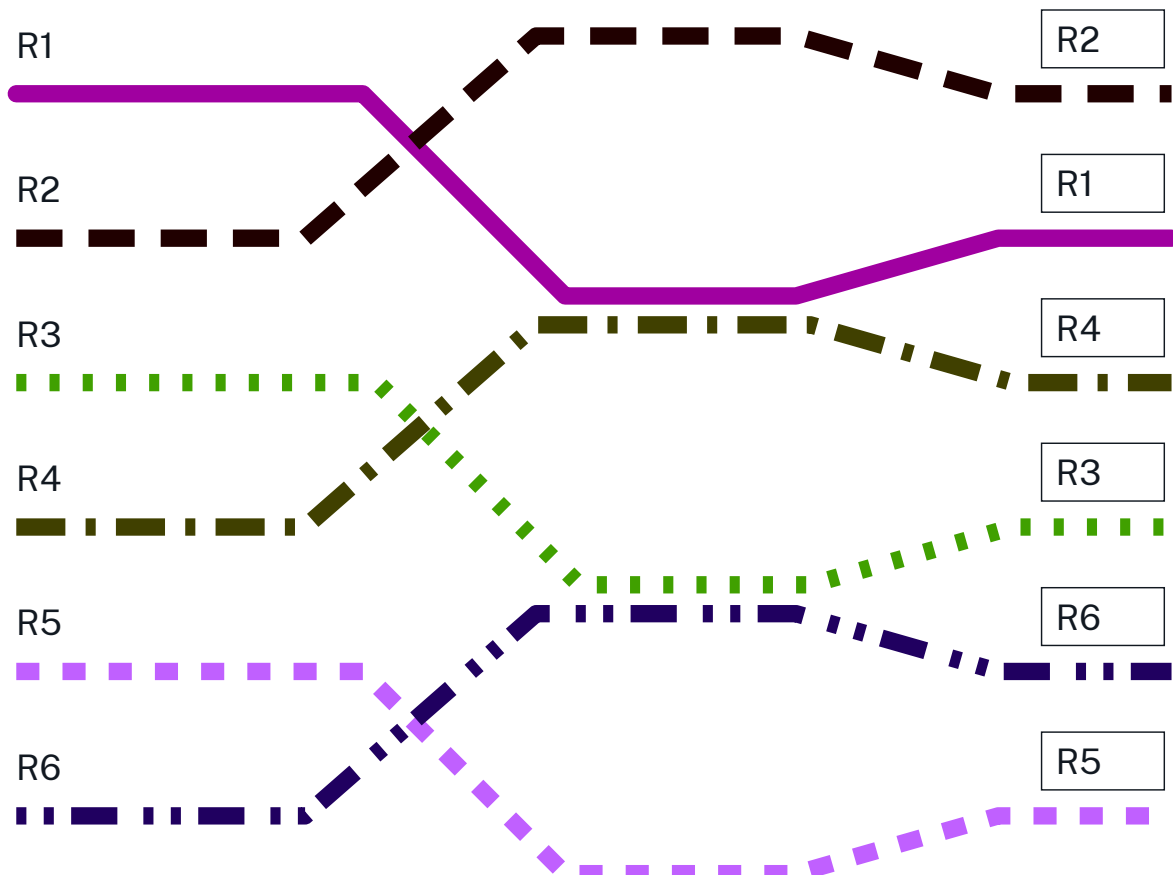


Transport colour

Source colour and display.

Network identities, digital calculations and proposed display support.

Source colours, codes and patterns



Normal digital view / original synthetic exercise
Crossings are not transfers.

Synthetic fixture - physical and passenger validation pending.

OTI colour study separates source identity from display treatment

A route colour can identify a service, connect its continuation across a map or distinguish a mode of transport. It cannot, on its own, explain a destination, confirm that a service is running or establish that a connection is usable. Open Transit Information's new colour study proposes shared rules for those relationships while retaining the identities already used by real networks.

The proposed information contract records a colour's source, meaning and display treatment. A source colour stays associated with its authority, application and version. Names, codes, shapes, topology and state wording carry essential meaning alongside it. Display support can respond to a background or medium without silently replacing the source identity.

The completed documentary work contains a discovery catalogue of 42 contexts and 12 case analyses. Thirty-three catalogue records have some inspected documentary evidence; nine are access gaps or leads that do not support substantive colour conclusions. The sample is purposive and uneven, concentrated on urban and rail contexts. It is not a census of world palettes or a representative study of passengers.

The original contribution is a semantic and display-profile proposal, an executable evaluator, constrained synthetic-palette experiments, editable diagrams and a locally checked monograph. The tools expose conflicts and make the proposed treatments reproducible. They do not establish a globally best palette, an adopted standard or an operator-approved replacement.

Three questions remain separate throughout the study. Does a specified paint have enough calculated contrast against its adjacent background? How far apart are two colours under a declared mathematical model? Can a person identify, trace or act on the complete message? A favourable answer to one question cannot stand in for the other two.

This delivery is complete as a local documentary study and reproducible technical proposal. It contains no recruited participants, physical colour measurements or operational trial. Claims about passenger effectiveness, calibrated media and production use remain questions for the next stage.

Network practice argues for context, not a universal palette

The documentary cases show that colour has different roles even within a single transport system. They also reveal why a visually convincing example or an official design intention should not be mistaken for a measured passenger benefit.

Transport for London's colour standard separates corporate, mode, safety and line roles, and distinguishes references for screen, process print, spot colour and paint. That is a production distinction as well as a visual one. The study retains the declared source of selected numerical values and makes its digital-space assumption explicit; it does not claim that the resulting screen specimens match a physical sign or printed master.

Île-de-France Mobilités' common passenger-information resources span several operators and applications while distinguishing paper and digital colour resources. RATP's account of a bus-map redesign changes palette, headings, interchange detail, line treatment and accessibility symbols together. These sources support examining coordinated rules. They do not isolate colour as the cause of any reported reading improvement.

Tokyo Metro's explanation combines line colour, a line letter and a station number with conventional names and direction information. Those channels can reinforce one another. The documented identity combines codes with colours; the destination supplies direction information. The study describes the intended grammar without inventing recognition percentages or copying protected station marks.

The Ciudad de México case starts from established identities within an integrated system. Its documentary evidence also includes a line identified with two colours, exposing the limits of a data model that assumes every identity is one simple display value. São Paulo's official names such as Linha 1-Azul add a colour word to the identifier. Names, status and hue are related information, rather than interchangeable substitutes.

Dates matter to these interpretations. A colour in a historical plan may refer to a service under construction or proposal. It does not establish that a passenger can board it today. Likewise, a recently found manual may contain historical reference tables whose current status remains unresolved. The report retains source dates, access depth and contrary observations without filling gaps from a screenshot.

The resulting design principle is to preserve a network's declared meaning and identity, then examine the complete information task. It is not to recolour every service until an abstract separation score improves.

Preserve the source and make the adaptation explicit

The proposed information model separates source identity from a derived display treatment. It records who supplied the definition, what entity and role it describes, which version and medium apply, and which non-colour cues carry the message. Background, viewing context, adaptation and review state belong in the record too. This is a research direction for specification review, not a new field silently added to OTI's runtime contracts.

For fixed real identities, the original specimens compare source colour alone with boundary or backplate support while retaining names and authored geometry. A bright route stroke on a light background may need a separate edge or a supported label. That treatment must leave the original value recoverable and describe its trade-offs, including width, overlap and visual clutter.

Limited-colour output is treated as a deliberate representation. The binary teaching specimen repeats identifiers and uses distinct patterns rather than merely removing chroma. The dark incident example separates service identity from state wording. These are original explanatory fixtures; they do not reconstruct an operator's network or claim to be approved physical products.

The synthetic-palette experiment answers a different question. For genuinely new categories, the generator selects six colours from an explicitly constrained candidate set using a declared worst-model distance objective. The result exceeds the study's chosen internal screening target. It is a reproducible calculation, rather than an aesthetic recommendation, a recognition rate or permission to replace colours in a real feed.

An 18-colour stress construction falls below the same internal target. That is a negative result for this search and objective, not a proof that eighteen categories are impossible. The need for names, codes and other distinctions remains even when a small synthetic set scores well. No candidate is declared the best colour for every passenger or application.

Real source definitions can be more complex than a single RGB value. The proposal retains that requirement, while the current evaluator is limited to its declared paint, background and transparency fixtures. Numerical screen values do not supply an automatic print recipe or reproduce the behaviour of an LED, reflective sign or e-paper device.

What the calculations establish, and what remains to test

The executed evaluator covers 896 digital print conditions and 216 pair/model comparisons. These are combinations of declared inputs, not independent passenger observations or hundreds of complete network designs. The report records the calculations, thresholds, assumptions and failures alongside the original source values.

The display-support calculations compare two selection rules. A treatment selected using only the normal view left calculated conflicts under some declared transformed views. A rule that checked the worst declared transform before choosing support resolved those numerical conflicts in the tested grid. That does not show that a thin, antialiased edge is visible in use or that extra backplates make a crowded map easier to trace.

The colour-vision transforms are approximations, not diagnoses or exact accounts of individual vision. The implemented tritan settings are approximations; the original model does not claim to simulate tritanopia. Clipping and model-family limits are recorded. A parameter is not a percentage of vision lost, and grayscale is a limited-colour diagnostic rather than a medical simulation.

Physical media require their own evidence. Screen values cannot establish print equivalence, reflective performance, glare behaviour or readable display distance. The study has no measured calibration or physical proof. Its proposed print and device work therefore remains a dependency, rather than a ready production profile.

The prepared evaluation programme asks whether repeated identifiers, contextual support and patterns reduce task errors enough to justify added clutter. It keeps the palette fixed for that comparison and distinguishes it from a separate synthetic-palette question. Route identification, tracing, incident interpretation and accessibility-state tasks have different success conditions. Planned assignments are not participants, and the response log contains no observations.

Before recruitment or operational use, the work needs expert review of the model and materials, appropriate research arrangements, a completed controlled stimulus set, justified analysis and calibrated apparatus. Field tasks and physical production remain separate stages. The proposed work does not assume that an OTI alternative will outperform existing local conventions.

Notes for editors

Study and evidence

Colour is a promise - transport colour and accessible information is the OTI-BD-006 living report, research release 0.1.0, report revision 0.1.1, dated 23 October 2026. It contains source-level provenance, 12 documentary cases, the original model and evaluator, technical results and prospective evaluation programme.

The 42-record discovery catalogue includes 33 documentary records and nine gaps or leads. Computational contrast, colour-distance diagnostics, model transformations and human task performance are distinct evidence classes. No physical or participant validation has been completed.

Selected primary references

- [TfL: Colour standard, Issue 11.](#)
- [Île-de-France Mobilités: passenger-information resources.](#)
- [Tokyo Metro: station numbers and line identity.](#)
- [SEMOVI: October 2023 visual-integration manual.](#)

About Open Transit Information

Open Transit Information (OTI) is developing shared quality requirements, draft specifications, data conventions and experimental tools for transport information. Singularity Ingeniería currently maintains the project under a maintainer-led governance model.

The canonical website is opentransitinformation.org. The technical source is available at [opentransitinformation](#). Draft specifications, experimental software and complete product editions have separate release states. This study does not establish official-standard recognition, certification or endorsement by the organisations studied.

Preparation and reuse

Prepared with AI assistance against the dated study. Independent human editorial review remains pending. No public press contact is listed.

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