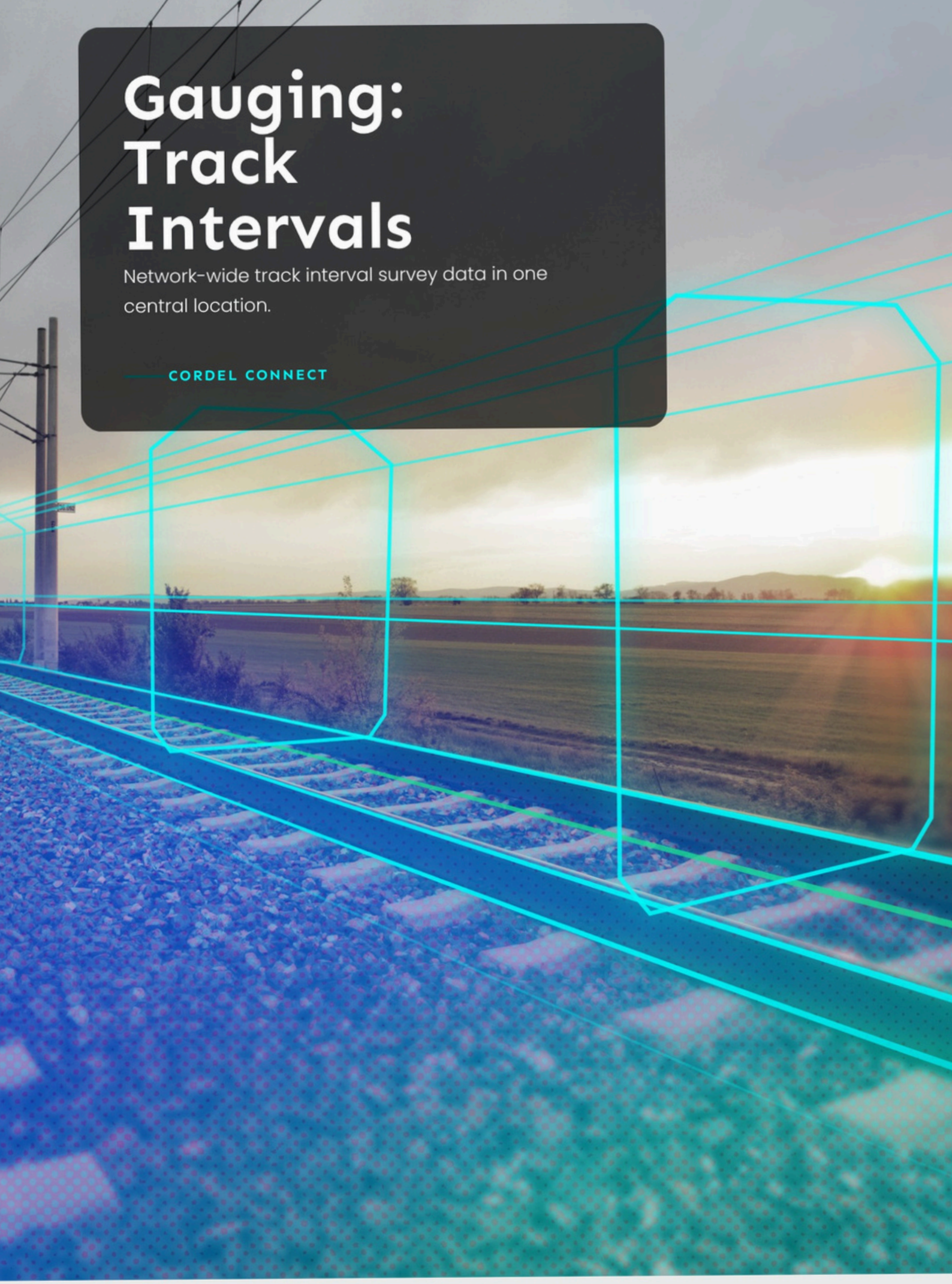
Gauging: Track Intervals

Network-wide track interval survey data in one central location.

CORDEL CONNECT



Information

Summary

This solution measures the distance between the left running edge of the primary track and point of interest on one track to either side of the running rail, and includes geometric measurements that can be used to assess passing gaugings in third party platforms. This information is QA'ed and presented visually, allowing users to review and remove invalid track interval slices prior to publishing and exporting surveys.

Geometry Definitions

Cant

Also known as superelevation, cant is the vertical distance (or the sloping height) between two rails. This is an important measurement as it will inform the amount of lean that a train will undergo as it moves along those tracks.

Units

Cant is displayed in millimetres (mm) as a convention.

Sign

As per the RIS-7773 document, a positive (+) cant value indicates that the right rail is higher (or the left rail is considered the low rail), a negative (–) cant value indicates that the right rail is lower (or the right rail is considered the low rail). This is all with your back to low-mileage, if facing the other direction than the signs are reversed.

See pg. 20 of the RIS-7773 document.

Images



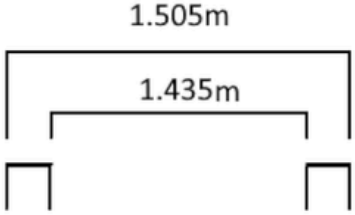
Positive cant

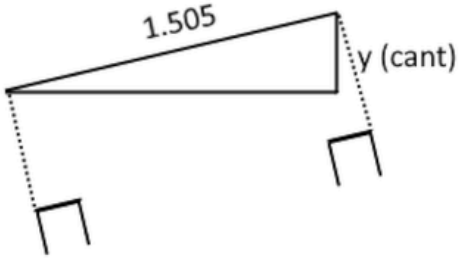


Negative cant

Measurement

Cant is measured over a specific hypotenuse length (1.505m as defined in the RIS-7773 document).





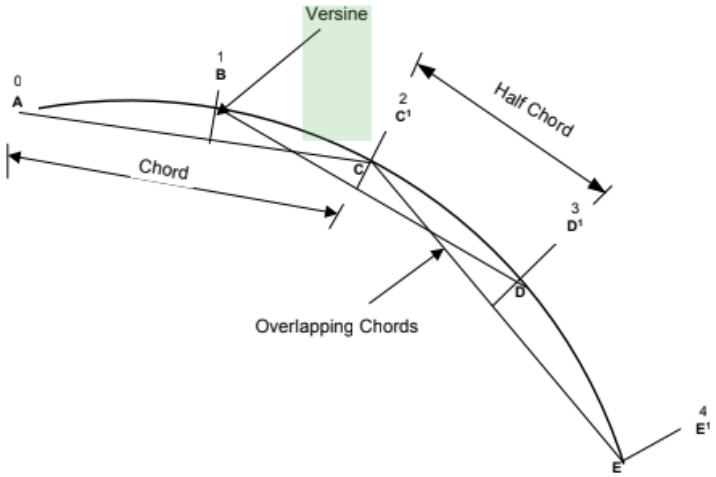
See pg. 18 of the RIS-7773 document.

Versine

The versine is a short distance measured from the midpoint of a chord to the arc of the circle, which informs the calculation of radius.

Versine is a measurement of how much a curve deviates from being straight, specifically related to a chord of a specific length.

The versine can be calculated by taking a fixed chord length (20m) that touches two points of the curve, and measuring the perpendicular distance from the centre back to the line segment.



Versine diagram

Radius

Is the measurement of a curve (from the track centreline) between two arbitrary points on a contiguous section of a turning track.
Radius is usually calculated by taking a 'versine' measurement, which is calculated over a fixed chord length.

Units

Radius is displayed in metres (m) as a convention.

Sign

As per the RIS-7773 document, a positive (+) radius value indicates a left hand curve, a negative (–) radius value indicates a right hand curve. Both of these values coincide with the cant curvature convention – radius and cant usually go hand in hand as a left hand curve should be slightly banked / leaned to the left (with a higher right rail). This is all with your back to low-mileage, if facing the other direction than the signs are reversed.

Images



Positive radius



Negative radius

Measurement

Radius is calculated from a versine measurement using a standard formula.

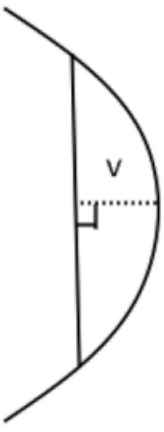
The chord length is selected according to the track radius. As a general rule of thumb, for a 20 m chord, the radius in metres (R) is calculated by dividing 50,000 by the versine measured in millimetres (v). For example, if v = 25 mm, then:

R = 50,000 ÷ 25 = 2,000 m

For a 10 m chord, the radius is calculated by dividing 12,500 by the versine measured in millimetres. For example, if v = 50 mm, then:

R = 12,500 ÷ 50 = 250 m

The versine is measured by placing a fixed-length chord between two points on the curve and measuring the perpendicular distance from the midpoint of the chord to the curve.



Versine measurement

How does this module work?

1. Slices (either generated by Cordel - or supplied as BYOD) are imported into Cordel Connect
2. Automated QA checks are performed
3. Slices are presented to clients in Cordel Connect for review
4. Clients review track spacing gauging data and generate surveys
5. Gauging data is exported to Rift for further analysis

Gauging Connect Payload Data (Track Spacing)

.MP4 QA Videos

```
*_Slices.MP4
```

.ZIP Slice Files

```
*_.scX.ZIP
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Gauging Data Management

The Gauging Connect Track Intervals module hosts large volumes of gauging data and provides a suite of tools that empower users to extract maximum insight from this data, in a way that makes sense to their business.

Key data management functionality:

- View geometric information within the navigator graph (Survey Editor)
- Remove invalid interval slices prior to publishing and exporting data for third party software assessments.
- Review/investigate automatic QA failures
- Store and manage current and historical gauging data
- Review/publish interval surveys
- Bulk export gauging data to third party platforms, such as D/Gauge

Survey management is flexible by design, allowing clients to configure data management to suit their current workflows. Surveys can be transitioned through different stages and can reflect client-defined statuses.

Editing Tools

Survey Editor: Navigator Graph

The survey editor page presents interval and track geometry data using the navigator graph, which is a 'top-down' view. Users are able to edit surveys by select groups of Track Spacing slices - and either accepting them or rejecting them. Rejected track Spacing slices are not included in the final data export, empowering users to quality control their track interval survey data.

What is shown on the Survey Editor Navigator Graph?

- •Gauge (the distance between the left and right rail)
- •Horizontal offset (horizontal distance between the left running rail and an adjacent left rail)
- •Vertical spacing (vertical distance between the left running rail and an adjacent left rail)
- •Track Centreline location for running track and the adjacent track/s
- •Cant and versine for the running track and adjacent track/s
- •Any QA warnings/failures with low or high values are highlighted

