

# NCDIT-T LRS System Integration Guideline

Version 1.2

DIT-T GIS

**Agency Enterprise LRS Platform:** NCDIT-T or NCDOT's Linear Referencing System (LRS) is implemented with ESRI's ArcGIS Roads and Highways, which include Roads and Highways desktop extensions, Roads and Highways for server, and Roads and Highways Event Editor (EE). Please refer to ESRI resources for technical documentations  
<http://resources.arcgis.com/en/communities/roads-and-highways/>

**Current Version:** Current production version is ArcGIS 10.8.1

**Scope:** This Guideline applies only to the scenarios when an application system is to be built to manage or maintain a set of highway attributes or LRS events that are not part of the NCDOT's road centerline based LRS Network properties, nor managed through Roads and Highways Event Editor.

**Authoritative LRS:** NCDOT adopted the road centerline based LRS Network as it's official Enterprise LRS, to which all highway attributes on state-maintained roads or events should be referenced.

**NCDOT LRS Integration Services:** NCDIT-T GIS Unit deployed a set of geoprocessing tools as REST web services so application system integration with the official LRS can be accomplished effectively. Consummation of these services are strongly recommended.

- a) Export Network service: "The Export Network tool enables external systems to synchronize with the Roads and Highways LRS Network to update routes, gaps, concurrencies, and measure translations. The Export Network tool can be published to ArcGIS Server as a geoprocessing service, which allows it to be invoked as a REST web service." Reference <https://enterprise.arcgis.com/en/roads-highways/latest/get-started/deploying-network-export-tool-as-a-service.htm>
- b) Relocate Events service: "The Relocate Events tool enables external systems to acquire measure changes to event records required to bring the event measure into alignment with the changes made to the LRS route in Roads and Highways. The Relocate Events tool can be published to ArcGIS Server as a geoprocessing service, which allows it to be invoked as a REST web service." Reference <https://enterprise.arcgis.com/en/roads-highways/latest/get-started/deploying-relocate-event-tool-as-a-service.htm>

**NCDOT LRS REST api:** ArcGIS REST api for LRS is also available for other NCDOT applications to incorporate or implement LRS functions and address specific requirements related to integration with LRS. Reference

<http://roadsandhighwayssample.esri.com/roads/api/index.html>

**Guidelines:** Based on established patterns, system integration with NCDOT's LRS should make use of NCDOT LRS Integration Services or combine these services with NCDOT ArcGIS api for LRS. This guideline applies to in-house developed applications, Commercial Off the Shelf (COTS) products, and custom developed solutions.