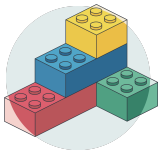

Operational Data Standard

[Internal Working Group Draft] ODS-Runcutting

Status

First draft is open for comments by working group participants through November 16, 2021. Please comment questions, concerns, and suggestions. Edits will be incorporated by into this draft by scott@compiler.la prior to the November 16 meeting of the full Working Group.

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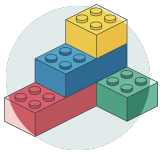

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[Internal Working Group Draft] ODS-Runcutting

Overview

Transit agencies and other mobility service providers use existing transportation concepts to coordinate the movement of personnel and vehicles in order to provide for the timely and efficient provision of fixed route transit service. Because these services provide rides to travelers based on a predetermined schedule, agencies and other providers have the ability to achieve greater efficiencies in deadheading, to provide regular locations for driver changes or layovers, and to establish a plan for the efficient maintenance and/or storage of individual vehicles at a desired yard.

The Operational Data Standard is intended to represent these concepts in a standard format, so that operational data such as these can easily be rendered in a single language for transmission primarily between mobility technology components, such as CAD/AVL software and scheduling software, used by agencies and service providers to manage overall personnel and vehicle movements, personnel and vehicle relief, and timely operations of service.

The proposed modules for the Operational Data Standard proposal include:

- ODS-[Personnel], which describes the individuals and the service providers that carry out transit operations for an agency within the scope of a given GTFS feed.
- ODS-[Facilities and Assets], which describes the yards, divisions, layovers, and other critical locations at which non-revenue actions take place.
- ODS-[Runs and Runcutting], which describes the relationship between non-revenue vehicle movements, personnel movements and revenue service.

Strawman Proposal - Runs and Runcutting

Goals

- Provide more context around the driver runs, including how runs are meant to relate to service days
- Understand when and where drivers are scheduled to begin and end work assignments
- Enable more effective extraboard coverage in the case of absences
- Provide input to on-time performance management processes
- Break down driver work assignments into segments (e.g. per trip)

- Represent driver relief drop-off/pick-up locations in a way that integrates well with stops
- Represent relief trips among other trips in the schedule to support later performance monitoring and planning (see Planned non-revenue service)
- Although mid-trip relief represents a split in the run (since the driver changes), avoid splitting the trip if possible to help maintain a positive user experience for the transit rider.
- Describe relief vehicles, which may or may not be transit service vehicles, including vans and cars; like the transit fleet, these vehicles have a home yard/garage and may require specific driver classification or credentials.

Open Questions

Specification

Runs and Runcutting

File: run_inventory.txt

Field	Type	Required	Notes
`run_id`	String	Required	Unique ID for the run
`service_id`	String	Required	Reference to the service in **calendar.txt** or **calendar_dates.txt**
`employee_id / badge_no`	String	Optional	Reference to **driver_inventory.txt**

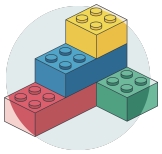
File: run_segments.txt

Field	Type	Required	Notes
`run_segment_id`	String	Required	Unique ID for the run segment

`run_id`	String	Required	The run this segment is part of
`sign_on_time`	Time	Optional	Required driver sign-on / pre-trip time
`service_start_time`	Time	Optional	Scheduled start time for this segment
`service_start_location`	String	Required	Reference to **facility_inventory.txt** or **stops.txt**
`service_start_location_type`	Enum	Required	E.g. `stop, yard`
`service_end_time`	Time	Optional	Scheduled end time for this segment
`service_end_location`	String	Required	Reference to **facility inventory** or **stops.txt**
`service_end_location_type`	Enum	Required	E.g. `stop, yard`
`sign_off_time`	Time	Optional	Required driver sign-off / post-trip time

Field	Type	Required	Notes
Proposal to associate deadhead with revenue service			
next_trip_id	ID referencing `trips.txt`	Conditionally Required	First trip on the block that the vehicle will be serving after the deadhead Required if deadhead_type=0 (Pull-out) or 2 (Mid-block)
prev_trip_id	ID referencing `trips.txt`	Conditionally Required	Previous trip on the block that the vehicle was serving before the deadhead

			Required if deadhead_type=1 (Pull-in) or 2 (Mid-block)
Proposal to include schedules for deadheads			
begin_time	Time	Conditionally Required	For pull-outs, the scheduled time the vehicle is expected to leave the yard For mid-block deadheads, if the vehicle is not expected to depart immediately or shortly after arriving at the last stop of the trip, it should be the scheduled time the vehicle is expected to depart from the last stop on prev_trip_id to deadhead to the first stop on next_trip_id. Required if deadhead_type=1 (Pull-out)
end_time	Time	Conditionally Required	For pull-ins, the scheduled time the vehicle is expected to return to the yard For other deadhead types, if the vehicle is scheduled to arrive earlier than `arrival_time` for the first stop on next_trip_id, a different time may be specified here. Required if deadhead_type=1 (Pull-in)



Operational Data Standard

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Trillium's modified runcut.txt file - **runs.txt**

Field	Type	Required	Notes
!?!?!?!?!?!	ID or integer	Yes	can be a concatenation of piece_number+run_id
piece_number	integer	Yes	sequence of events in a given run
service_id	ID - calendars.txt or calendar_dates.txt	Yes	
block_id	ID - trips.txt	Optional	*may not be necessary at all*
run_id	ID	Yes	represents an individual actor responsible for defined piece_number events
start_trip_id	ID - trips.txt or TBD run events file	Yes	can reference a rider-facing trip or a run event as described in another file
start_trip_stop_seq	integer - stop_times.txt or TBD run events file	Yes	can reference rider-facing trip stop_time or a value pulled from another file defining the event
end_trip_id	ID - trips.txt or TBD run events file	Yes	can reference a rider-facing trip or a run event as described

			in another file.
end_trip_stop_seq	integer - stop_times.txt or TBD run events file	Yes	can reference rider-facing trip stop_time or a value pulled from another file defining the event.. Allows for midblock relief. In concert with expanded location_types can reference stop_times.txt for non-public entries.

Sample:
run_number,piece_number,service_id,block_id,run_id,start_trip_id,start_top_seq,end_trip_id,end_stop_seq
1A,1,Weekday,1,A,deadhead2,1,deadhead2,2
2A,2,Weekday,1,A,LV100,1,LV200,22
3A,3,Weekday,2,A,LV200,23,EP300,44
4A,4,Weekday,3,A,TV200,1,TV200,50
5A,5,Weekday,3,A,deadhead5,1,deadhead5,2
1B,1,Weekday,2,B,deadhead17,1,deadhead17,2
2B,2,Weekday,2,B,LV300,1,LV400,22
3B,3,Weekday,3,B,EP400,23,EP500,44
4B,4,Weekday,3,B,taxi2,1,taxi2,2
5B,5,Weekday,1,B,taxi6,1,taxi6,2
6B,6,Weekday,1,B,TV300,1,TV400,50
7B,7,Weekday,1,B,deadhead22,1,deadhead22,2
1AS,1,Saturday,1S,AS,deadhead2S,1,deadhead2,2
2AS,2,Saturday,1S,AS,LV100S,1,LV200S,22
3AS,3,Saturday,2S,AS,LV200S,23,EP300S,44
4AS,4,Saturday,3S,AS,TV200S,1,TV200S,50

5AS,5,Saturday,3S,AS,deadhead5S,1,deadhead5,2

New Proposal Run Events

Field name	**Type**	**Required**	**Description**
run_id	Run identifier	Required	run
run_number	Run identifier	Required	run+block
piece_number	Run segment	Required	From runs.txt
service_id	Service identifier	Required	From runs.txt
event_name	Enum	Required	0 = Report Time 1 = Travel Time 2 = Dwell Time 3 = Pre-Trip 4 = Post-Trip 5 = Fueling 6+ = Etc.
event_alias	Text	Optional	Alternate event name
event_start	Time	Required	Event start time
event_end	Time	Required	Event end time

event_start_location_type	Enum	Required	0 = stops.txt 1 = non revenue location
event_start_stop_id	Start location	Required	Event start location
event_end_location_type	Enum	Required	0 = stops.txt 1 = non revenue location
event_end_stop_id	End location	Required	Event end location