

4.1.4 Lane network

4.1.4.1 Identification

Name : Lane network
Identifier : ViaNova.Dbdd.ConceptualSchema.LaneNetwork

4.1.4.2 Description

In this schema a road network is described as network of lanes.

The network of lanes is modelled as a non-planar directed graph. See the schema Road network Geometry.

A lane element is considered to be a part of one and only one carriage element.

4.1.4.3 Conceptual schema

```
SCHEMA LANENETWORK;  
  
    USE FROM ROADNETWORKGEOMETRY  
        (decimetre,  
         Edge,  
         TerminatingNode,  
         IntermediateNode,  
         Route,  
         Segment);  
  
    ENTITY LnElement  
        SUBTYPE OF(Edge);  
        width : decimetre;  
        SELF\Edge.startsAt : LnJunction;  
        SELF\Edge.endsAt : LnJunction;  
        SELF\Edge.continuingEdge : OPTIONAL LnElement;  
    END_ENTITY;  
  
    ENTITY LnJunction  
        SUBTYPE OF(TerminatingNode);  
    END_ENTITY;  
  
    ENTITY LnIntermediateNode  
        SUBTYPE OF(IntermediateNode);  
        SELF\IntermediateNode.isCoincidentWith : LnElement;  
    END_ENTITY;  
  
    ENTITY LnRoute  
        SUBTYPE OF(Route);  
        SELF\Route.startsAt : LnIntermediateNode;  
        SELF\Route.endsAt : LnIntermediateNode;  
        SELF\Route.alongEdges : LIST [1:?] OF LnElement;  
    END_ENTITY;  
  
    ENTITY LnSegment  
        SUBTYPE OF(Segment, LnRoute);  
    END_ENTITY;  
  
END_SCHEMA;
```

Schema 4-4 Lane network schema

4.1.4.4 Entity descriptions

The various entities together with some auxiliary definitions are described below.

Lane element

A lane element is an edge between two nodes (lane junctions) in a lane network.

Lane Intermediate Node

A node on an edge (lane element) in the lane network.

Lane junction

A node in a lane network at which one or more edges (lane elements) start or end.

Lane Route

A route through a lane network. A route may encompass one or more lane elements and starts and ends with an intermediate node on the first and last element respectively.

Lane Segment

A route through a lane network where each next lane element is the continuing element of its predecessor.

Note: a lane segment is thus a route where you only drive straight on and never switch to a co-lateral lane.

4.1.4.5 Type descriptions

The various types together with some auxiliary definitions are described below.

4.1.4.6 Integrity constraints

This schema is based on constraints specified in RoadNetworkGeometry.

Some constraint has to be formulated to prevent twisting lane connections on continuing carriageway elements. I.e. if

1. Carriageway element Cw2 is a continuing element of carriageway element Cw1 and
2. Lane Ln1a and Ln1b are part of Cw1 and lane Ln2a and Ln2b are part of Cw2 and
3. Ln1a is left of Ln1b then
Ln2a should also be left of Ln2b.

4.1.4.7 Other security aspects

There are no additional security requirements

4.1.4.8 Performance aspects

There are no additional performance requirements.

4.1.4.9 Implementation aspects

There are no additional implementation requirements.

4.1.4.10 Abbreviations

Cw	Carriageway
Ln	Lane
Mw	Motorway

4.1.4.11 References

See section 2 for a complete reference description.

[...] ...

