



ecoMap and ecoCooperativeHorizon



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Overview

- ecoMap
 - Core technology – roadside and in-vehicle
 - SP2
 - One interface, two implementations
- ecoCooperativeHorizon
 - Vehicle technology
 - SP3, shared in SP4
 - One interface, and default implementation



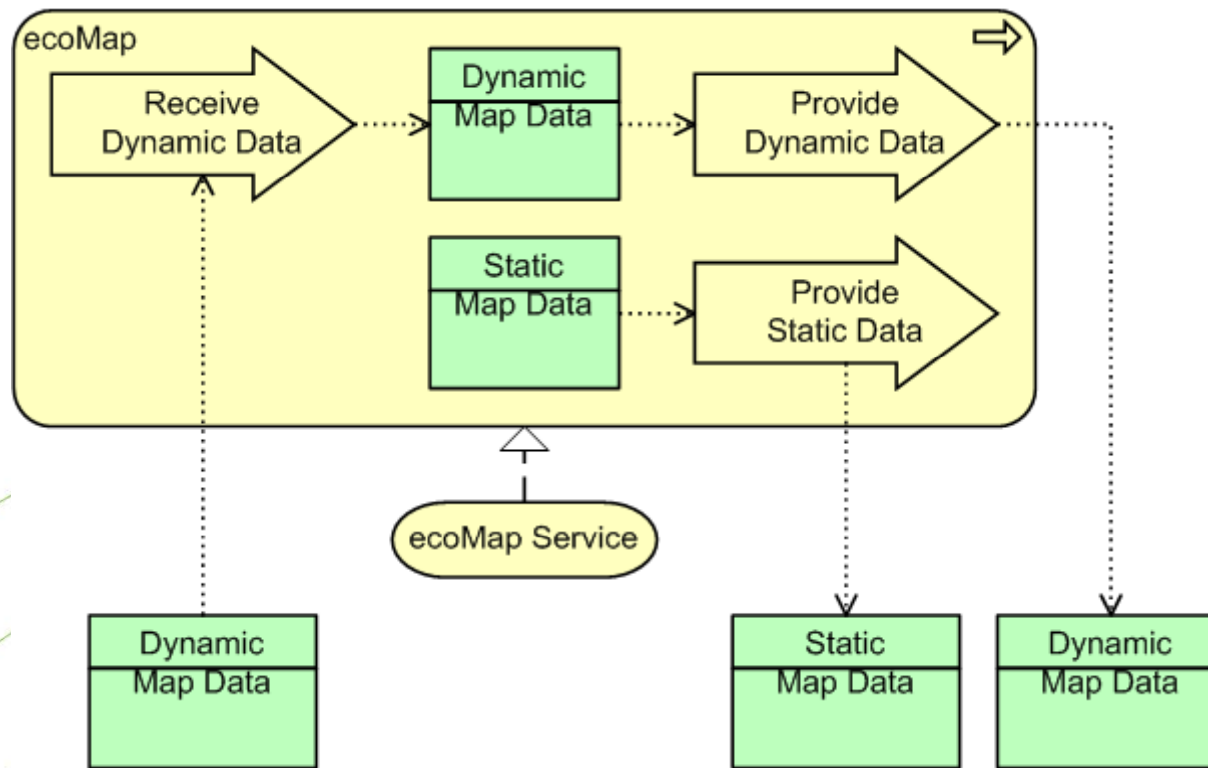
ecoMap

ecoMap Design Criteria

- Long-range („global“) map
 - Actually, between test site and all of Europe
 - Not local!
- Static and dynamic data
 - Static data from standard commercial maps
 - Dynamic data from eCoMove services
- Each station has its own map
 - Different base data (from different vendors)
 - Different areas of interest
 - Incomplete information

ecoMap Architecture

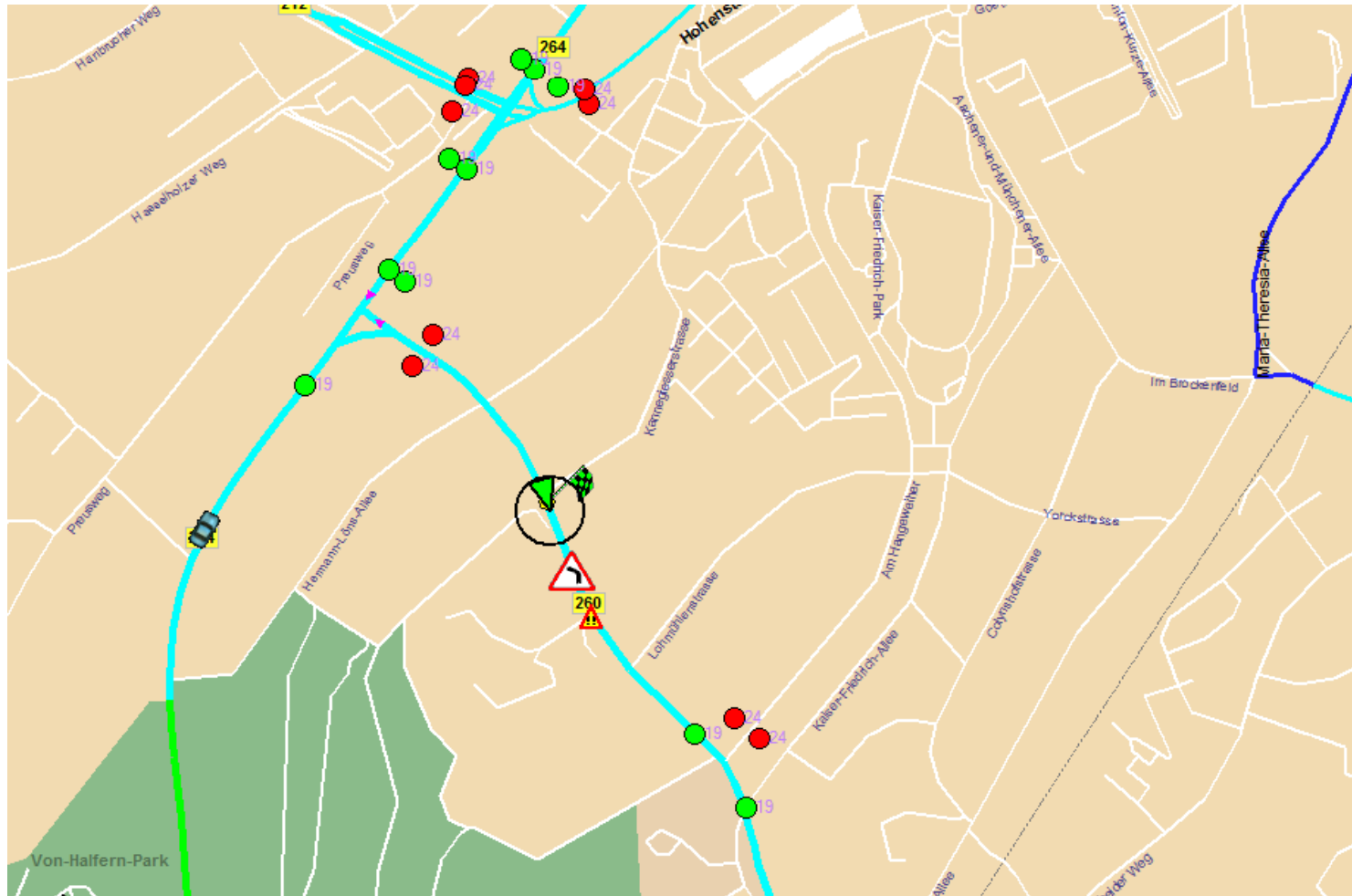
- Central access point to location data



ecoMap Data

- Static data
 - Road network geometry
 - Base properties
 - urban, motorway, ...
 - speed limits
 - ADAS data
 - speed, curvature, slope
 - Speed data
 - average speed at time
 - from historic probe data
- Dynamic data
 - Vehicles
 - from CAM ecoMessage
 - Traffic signals
 - from TSPDM
 - Advice
 - from SLAM or server
 - Events/incidents
 - from TPEGM or server
 - Sensor data
 - for roadside and central apps
 - Flow and emission
 - internal to apps

ecoMap Visualization



ecoMap Implementation

- Interface bundle
 - Pure OSGi
 - For all partners
- Implementations
 - Map vendor specific
 - Reuse existing code
 - native implementation
 - JNI access
 - OSGi facade



ecoCooperativeHorizon

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Johannes Stille, NOKIA HERE

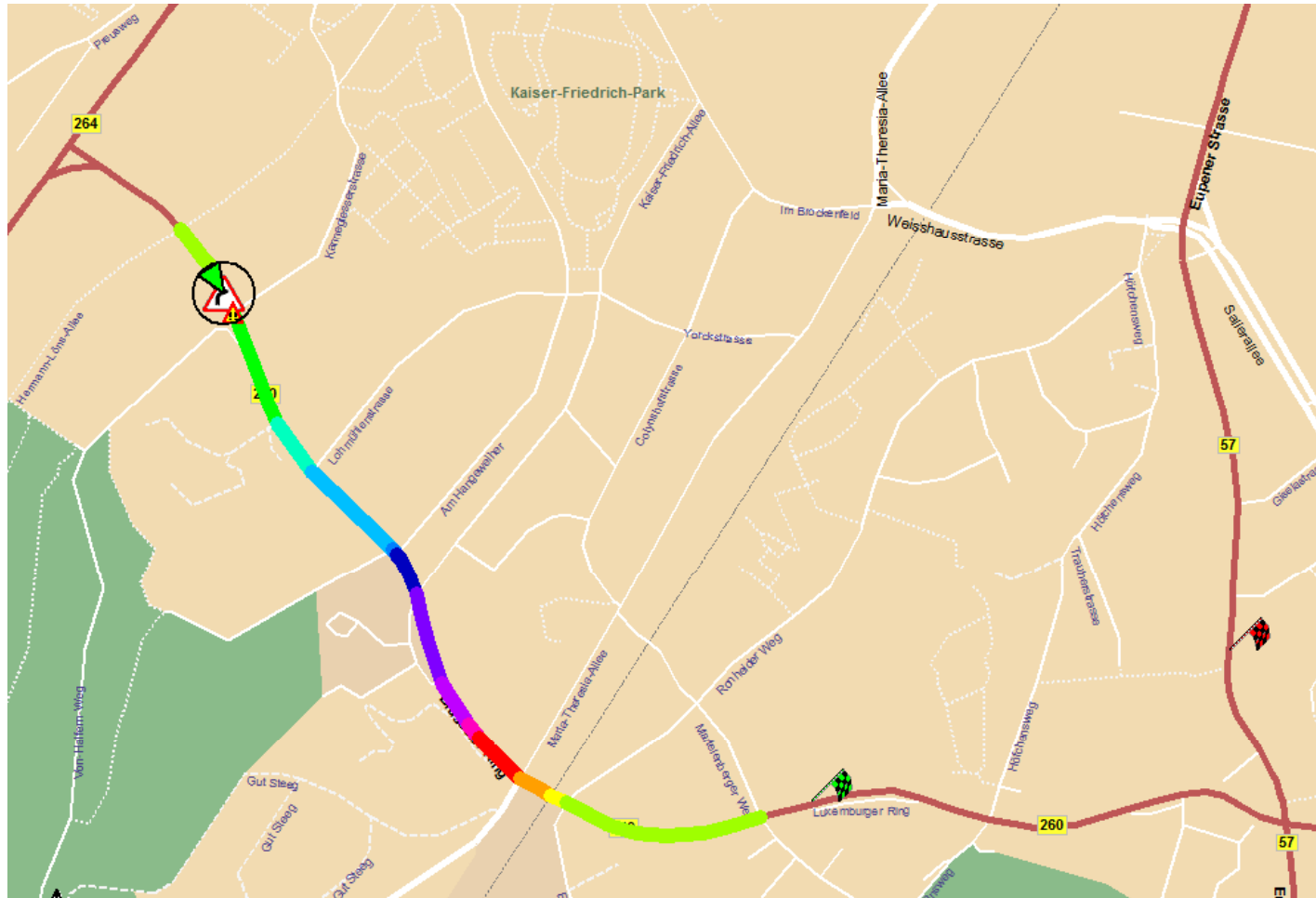
 **eCoMove**

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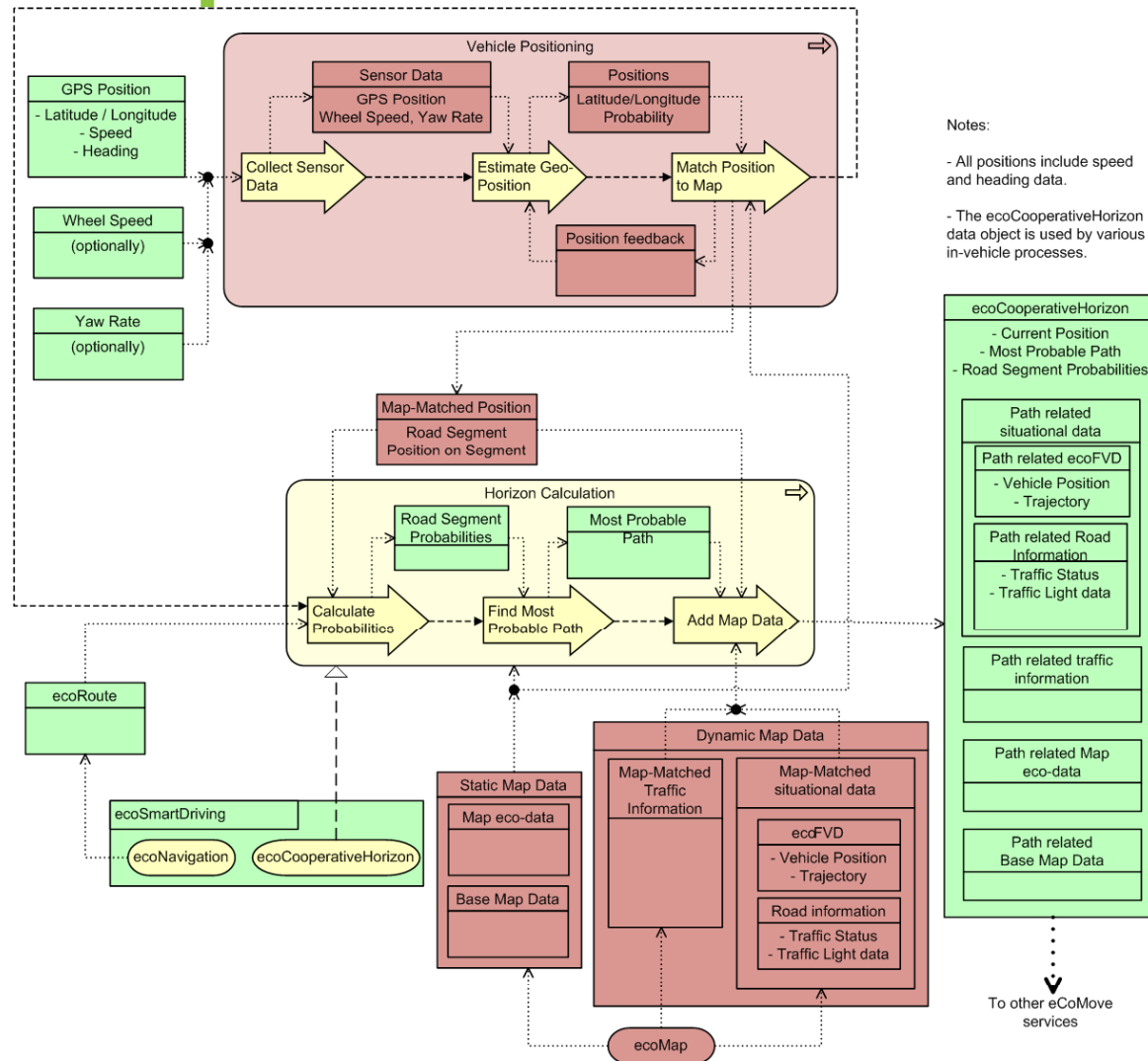
ecoCooperativeHorizon Definition

- Electronic Horizon
 - Look-ahead to the road in front of the vehicle
 - By definition vehicle-centric, thus SP3
- Cooperative
 - Dynamically exchanged data
- eco
 - Data needed to save fuel / CO₂ emission

ecoCooperativeHorizon Visualization



ecoCooperativeHorizon Architecture



Notes:

- All positions include speed and heading data.

- The ecoCooperativeHorizon data object is used by various in-vehicle processes.

To other eCoMove services



ecoCooperativeHorizon Design

- Path
 - Possible/probable trajectory of the vehicle
- 1-dimensional model
 - Organized by distance from vehicle
- Data attached to path
 - All kind of data extracted from map
- Fundamental data
 - Not path specific
 - E.g. vehicle speed
 - Saves regress to other services

ecoCooperativeHorizon: Core Horizon

- Begin with vehicle position
 - map-matched
- Probabilities to reach road segments
 - heuristics, using various influence factors
 - uses route from ecoNavigation if available
- Select Most Probable Path (MPP)
 - only a single path used by most applications
- Add road information
 - everything (almost) available from the ecoMap

ecoCooperativeHorizon: Data

- eco-Data
 - Road base data
 - Geometry
 - Intersections
 - Properties (urban, ...)
 - ADAS data
 - Speed limit
 - Curvature
 - Slope
 - Speed data
 - From historic probe data
- Cooperative Data
 - Vehicles
 - Position and speed
 - Traffic signals
 - Phase and time to change
 - Advice
 - Speed to approach traffic light

ecoCooperativeHorizon: Implementation

- Interface
 - Pure OSGi
 - For all partners
- Implementation
 - Default implementation
 - Available to all partners
 - But they can do their own.
 - Pure OSGi
 - Uses ecoMap and Positioning OSGi services