Possible Use Cases in the Smart Mobility and Tourism Domain

(from the EU H2020 CHOReVOLUTION Project)

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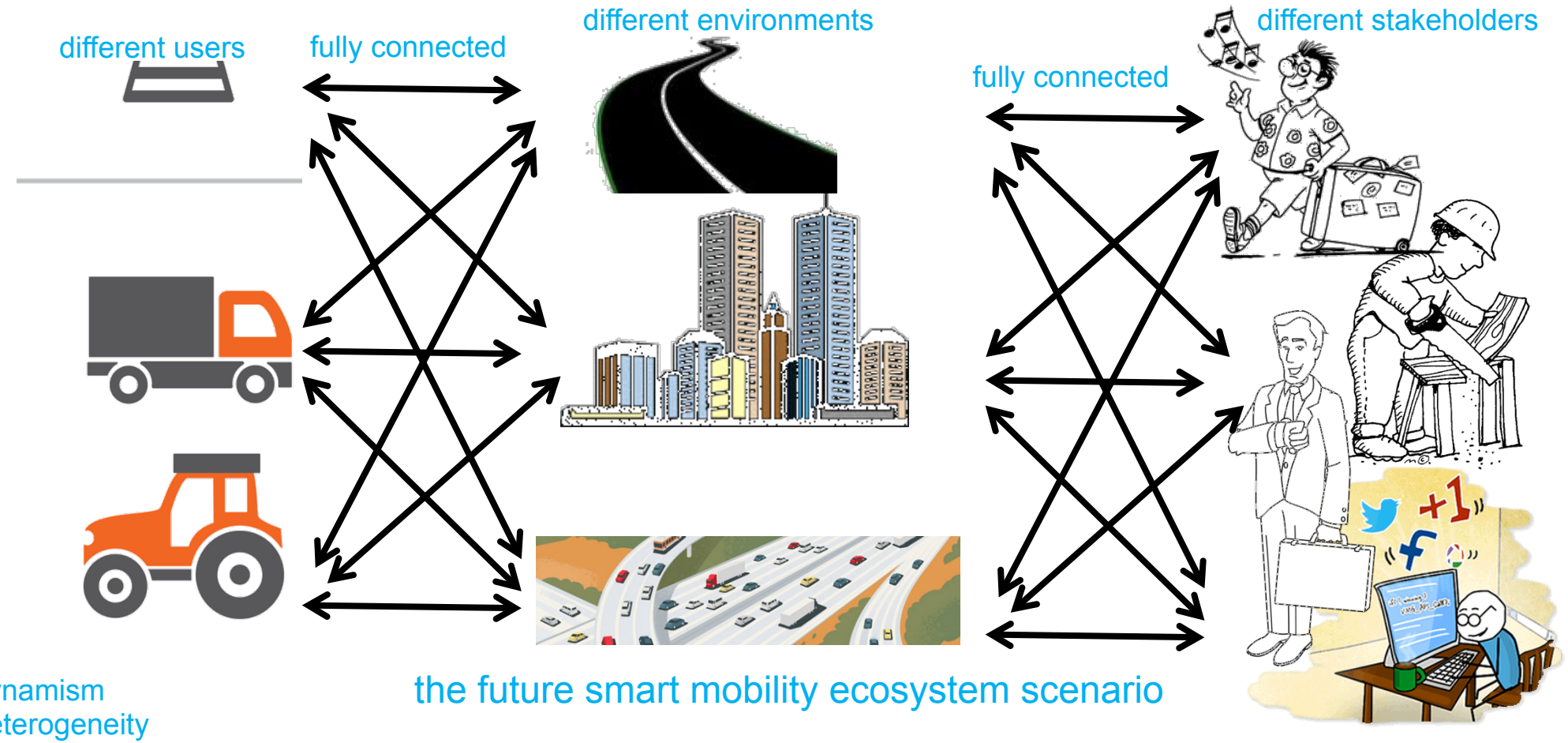
Setting the context: mobility ecosystems (e.g., VeSoS)

- Growth of innovative and revolutionary everyday-life scenarios within smart cities



the future smart mobility ecosystem scenario

- Dynamism
- Heterogeneity
- New value added services
  e.g., route guidance, speed advisory,
  parking availability, POI suggestions

Setting the context

- The ability to integrate independent subsystems and support their seamless cooperation is of paramount importance

dynamic **evolution** according to…

changing user preferences

changing environmental context

new business needs

First use case

- Smart Mobility and Tourism
  - SOTA: solutions to improve the travelling experience of people and their capabilities to access and use various types of services when visiting our cities and regions
    - planning of people mobility
    - provision of real-time, updated information during travelling
  - beyond SOTA: support for dynamic and context-aware travellers interaction with a number of resources connected to the travel
    - e.g., hotel information and booking, access to and payment for touristic sites, participation to events, use of public services, etc.
  - main subjects of validation (area of Porto Antico – Genova – Italy)
    - provision of solutions for designing and executing domain-specific choreography patterns
    - dynamic adaptation to the changing mobility and user
    - security aspects to create a trusted environment
    - enhancement of the user experience

11 Feb. 2016

Required Development Support

- They are really looking for
  - an easy way to create smart apps on top of existing services/ systems
  - automated tool support for
    - “easily” dealing with distributed workflow management
    - taking care of service/data binding and protocol adaptation

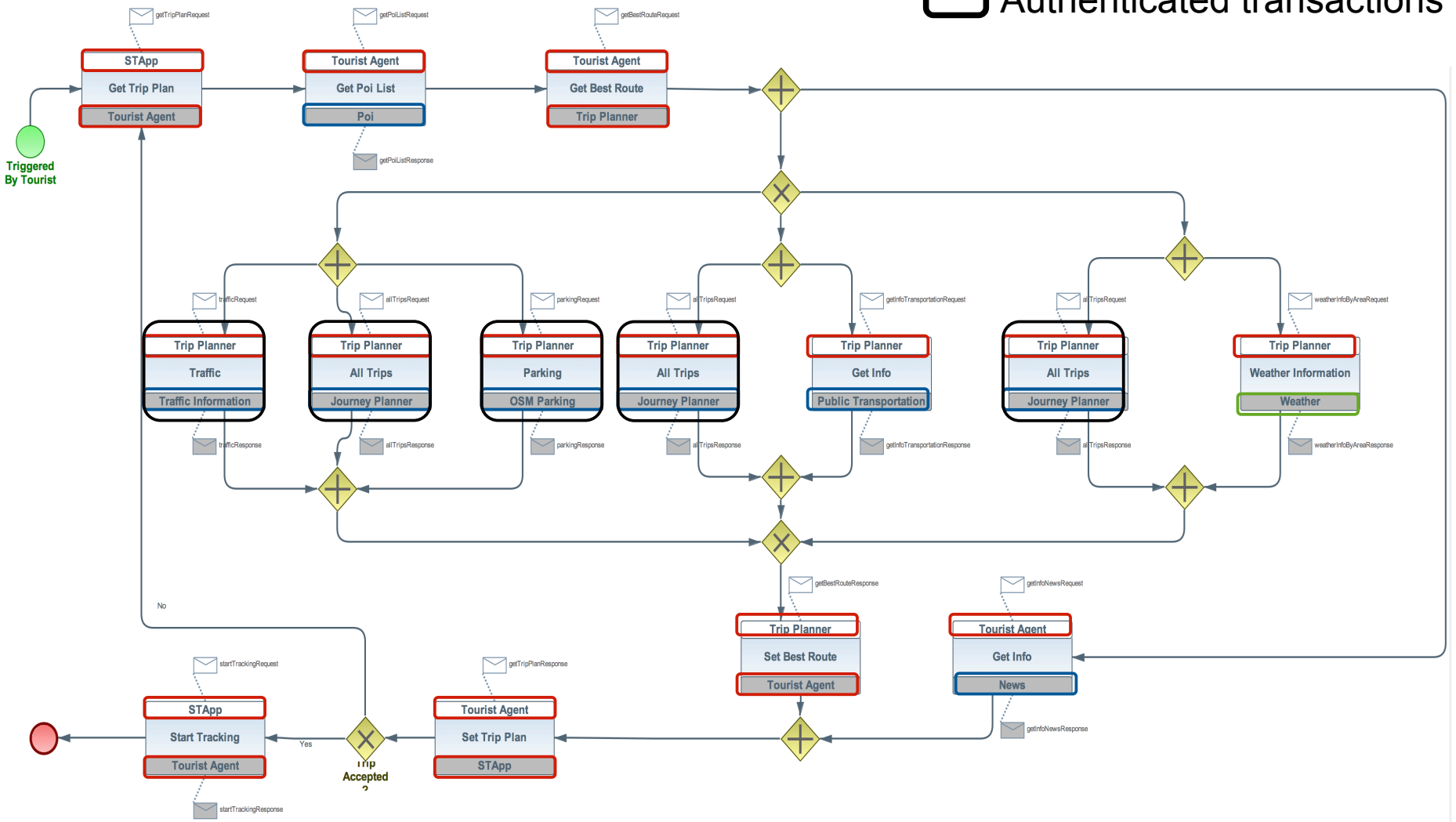
Choreography of the Scenario Implemented

Prosumer Services

Third-party REST Services

Third-party SOAP Services

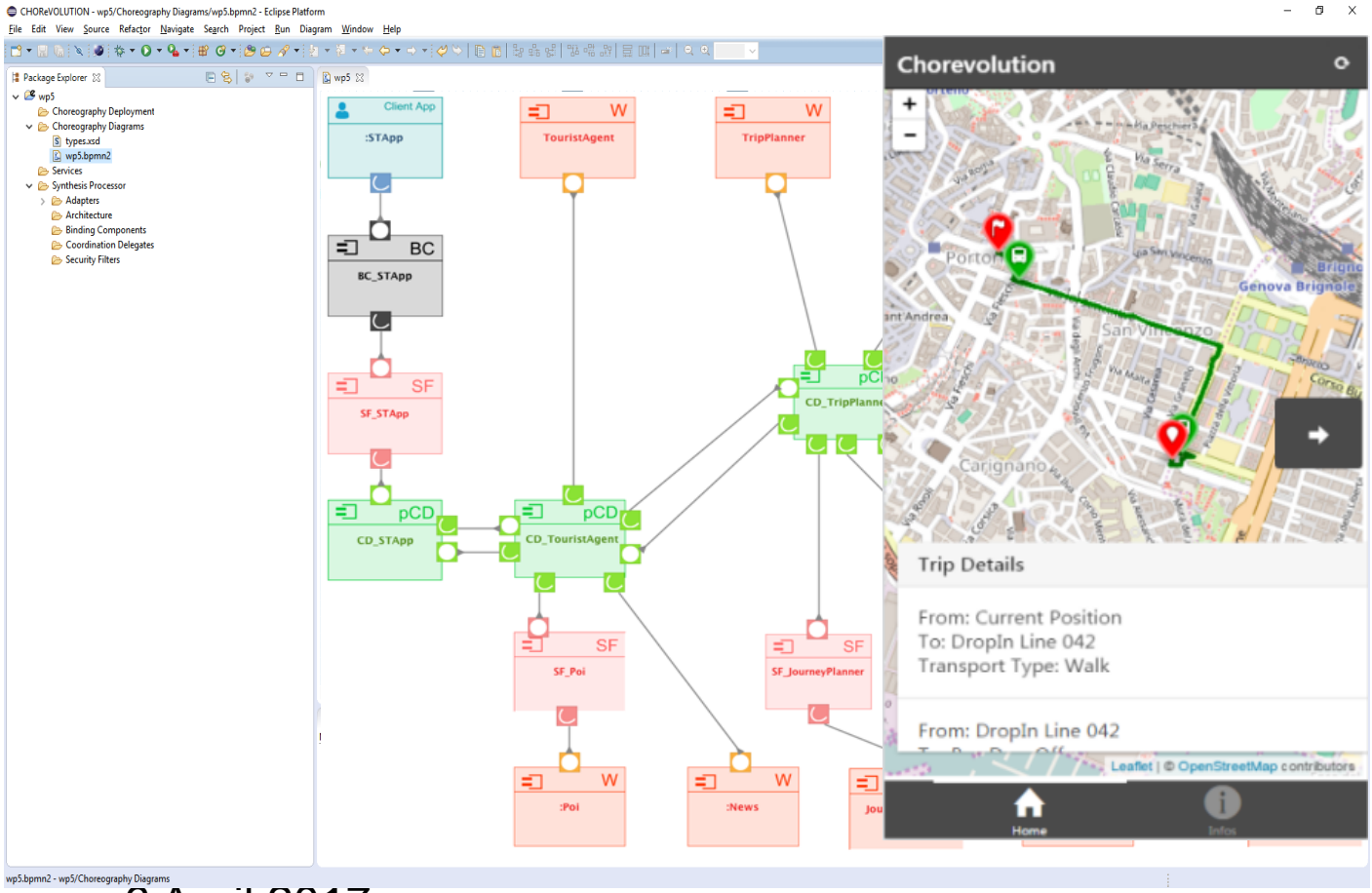
Authenticated transactions



First Use Case Implementation

We started identifying available local and global services in the Smart Tourism Domain in our town (Genoa)...

… Then we designed a choreography using the CHOReVOLUTION Studio

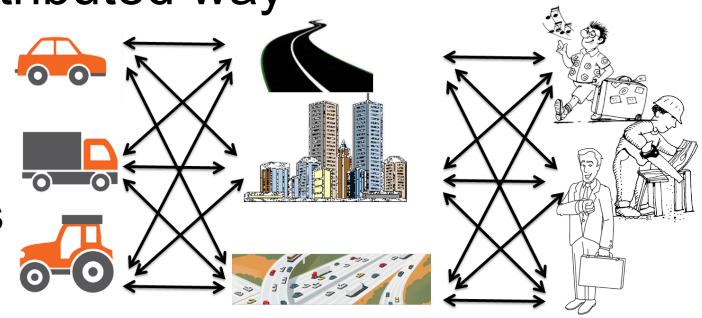


The synthetised choreography has been deployed on a OpenStack cloud environment

We built a simple android app to let tourists select POIs in the nearby and get best routes

Second Use Case

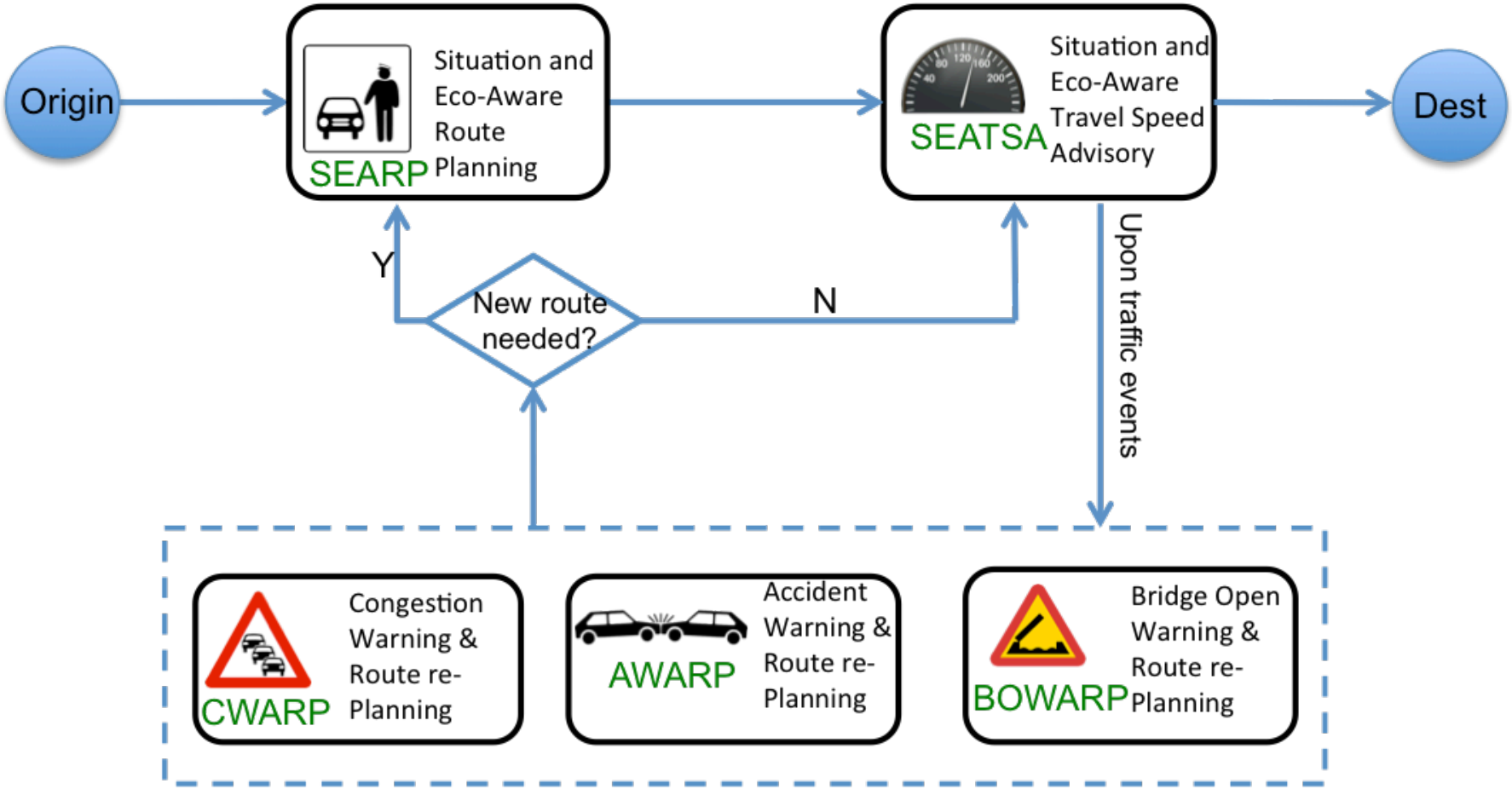
- Urban traffic coordination
  - SOTA: traffic optimization based on road traffic data collection and centralized analysis of the collected data
    - suitable for long term traffic management, e.g., traffic prediction
    - not suitable for dynamically adapting to emergent traffic situations, e.g., accidents blocking some routes
  - beyond SOTA: cooperative traffic management systems able to coordinate all components/systems in a fully distributed way
  - main subjects of validation
    - traffic management distributed coordination patterns
    - security to protect the deployed elements
    - heterogeneity, e.g., different styles of interaction



Required Development Support

- They are really looking for
  - development support for promoting the reuse and integration of already available services/Things/Systems
  - easy (tool guided) development of
    - composition/coordination means
    - adaptation means to tackle heterogeneity
    - security policies enforcement

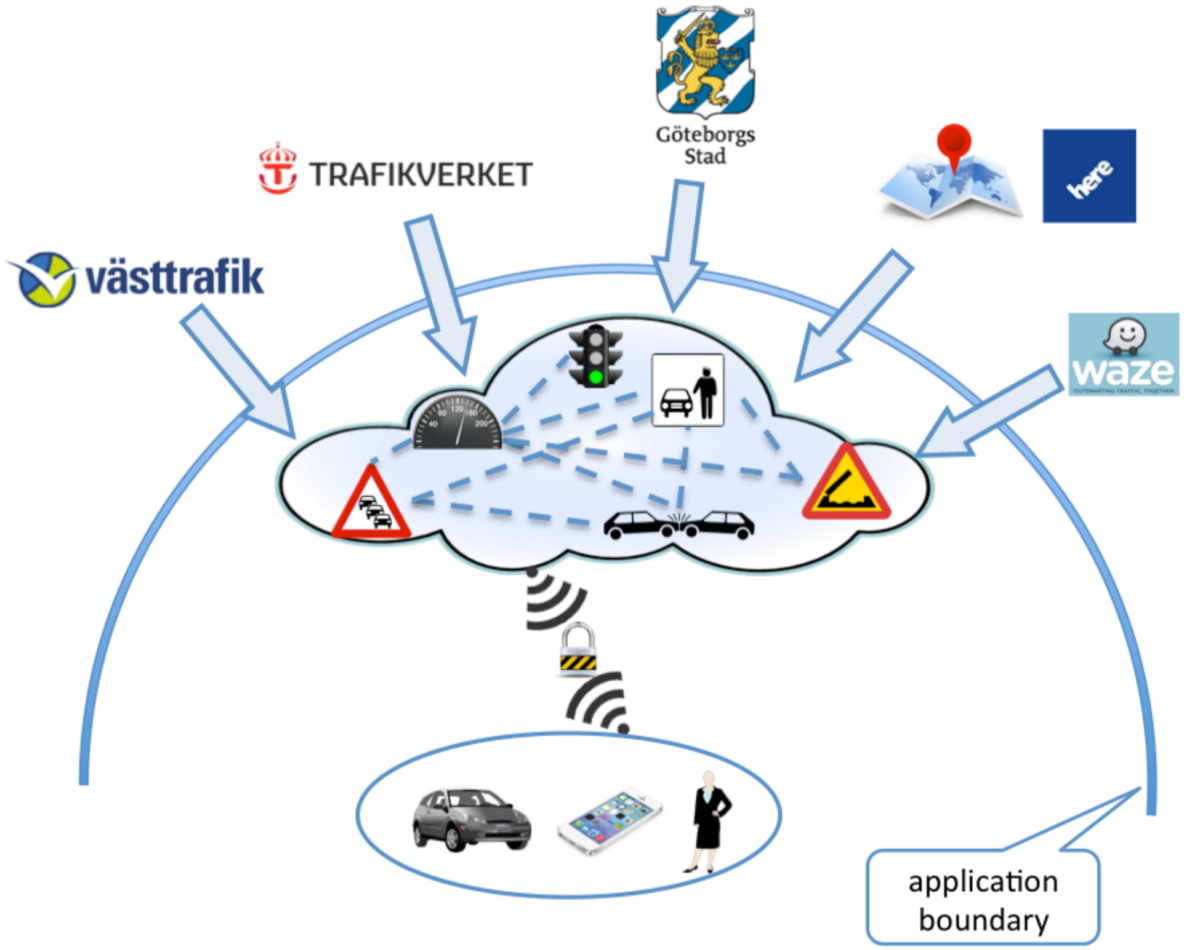
SEADA initial prototype



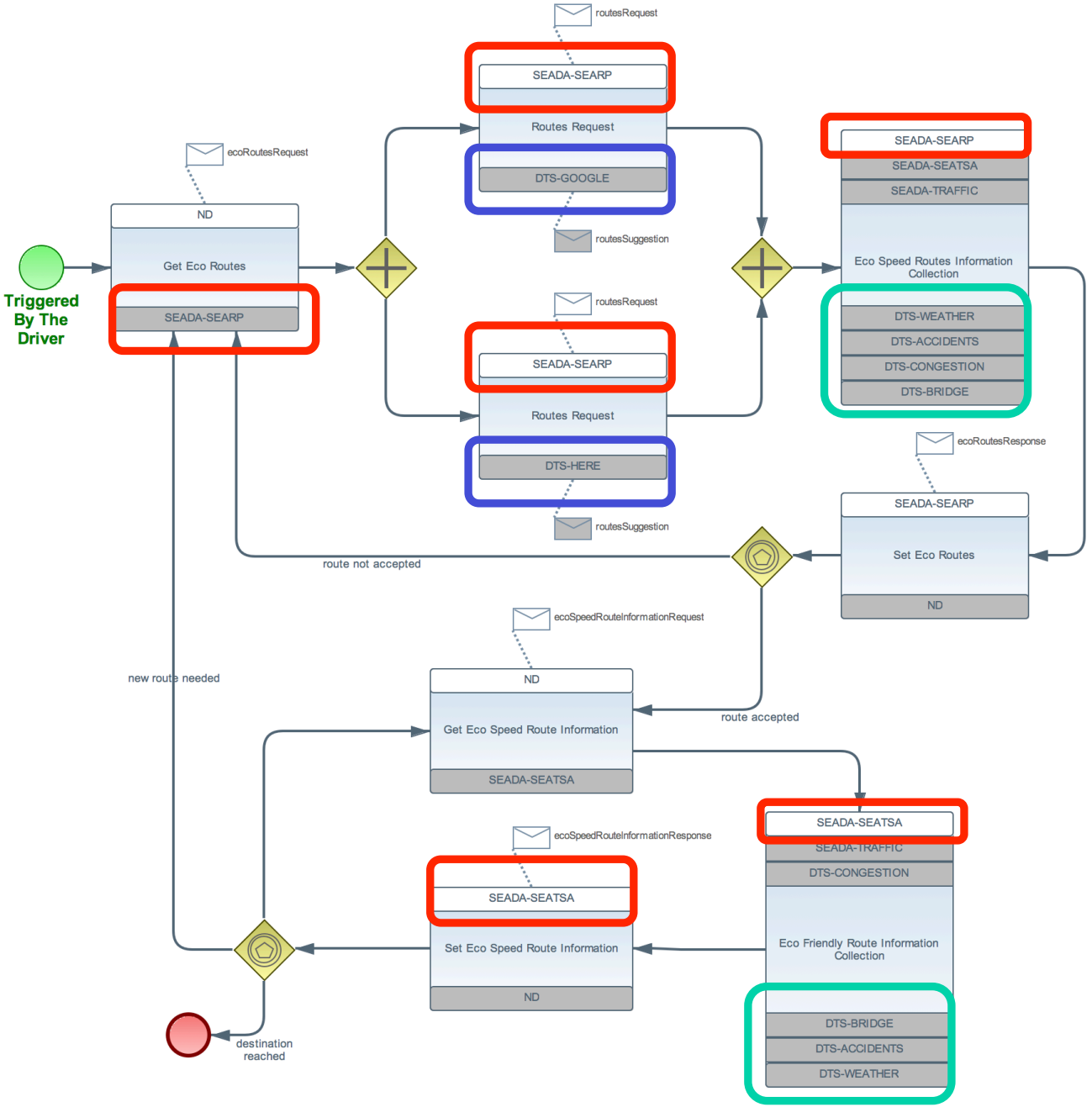
Situation and Eco-Aware Driving Application (SEADA)

Scenario description – Situation and eco-aware driving assist (SEADA)

- Use Case Urban Traffic Coordination (UTC)
  - Situation-aware and eco-friendly driving
    - improved driving comfort,
    - traffic efficiency,
    - emission reduction.



SEADA: Choreography diagram



Prosumer services

- To integrate core business logic
- SEADA-SEARP for route planing
- SEADA-SEATSA for eco-evaluation
- SEADA-TRAFFIC for traffic information preparation

External SOAP services

- To provide route info
- DTS-Goolge
- DTS-Here

External REST services

- To get real-time traffic info
- DTS-WEATHER
- DTS-ACCIDENT
- DTS-CONGESTION
- DTS-BRIDGE
- Need binding components to deal with service heterogeneity