

D35.1 - Multi-operator data exchange capacity

PUBLIC SUMMARY ONLY (PS)

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Document name:	D35.1 - Multi-operator data exchange capacity – PUBLIC SUMMARY				Page 1 of 3
Reference:	SCR-WP35-D-THA-010-PS	Dissemination:	PU	Version:	4.0
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1 Public Summary

D35.1 capacity is an innovative supervision system capable to improve information sharing between the multiple stakeholders involved in the day-to-day security management of a urban public transport intermodal exchange node. This capacity provides a consolidated real-time view of the premises, operations, passengers and events in the intermodal exchange node as well as standard & managed communication and information means between stakeholders. By stakeholders, we mean:

- Different **PTOs**, that may be bus, tram, metro, or rail operators, operating inside the same multimodal exchange node;
- The various **first responders** (police, firemen, first aid/ambulance/sanitary services, army, road services, cleaning...);
- **Passengers**, who are not all alike, therefore do not need the same information and do not understand the same language nor use the same media;
- **Other stakeholders** that may be found in multimodal exchange nodes, such as shopping malls, border control, etc.

Incidents that occur on a urban public transport system usually require public transport operators not only to act according an internal emergency plan, but also to cooperate with these multiple stakeholders. During this cooperation, exchanging relevant data about the current incident is made difficult mainly because of three main constraints:

- the vocabulary used in this communication may differ between stakeholders;
- the technical systems used by the different stakeholders are not necessarily interoperable nor even connected, and will not be;
- PTO staff has limited incentive to share information apart from transferring responsibility to manage a security incident.

The capacity must enable to orchestrate incident management despite the existence of the above constraints by:

- Gathering relevant information through monitoring of available field sensors and questioning of involved stakeholders;
- Sharing the relevant information with the relevant stakeholders, using each stakeholder's own vocabulary;
- Updating stakeholders with real-time information during the incident and the service restoration process, using open interfaces towards standard devices

The solution proposed by SECUR-ED is based on the introduction of a powerful orchestration engine together with a state of the art supervision system within a SOA architecture. The orchestration engine enables to define simplified but expandable:

- Ontology¹, describing a public transport system with its stakeholders
- business processes, modeling most critical security procedures, including information exchange procedures
- semantic model, for the necessary information exchange

¹ In this context, an ontology is a model of the public transport system with the definition of relevant objects and concepts, their properties and their relations, using a unique vocabulary.

Document name:	D35.1 - Multi-operator data exchange capacity – PUBLIC SUMMARY				Page 2 of 3
Reference:	SCR-WP35-D-THA-010-PS	Dissemination:	PU	Version:	4.0
		Status:	Issued		



It then turns any SOA-based supervision system into a powerful information exchange tool, that detects conditions to trigger relevant security procedures, and suggests the necessary dialogues, information sharing and actions depending on the current situation, and its possible evolution, and eventually facilitates decision making.

The delivered prototype consists in an orchestration engine software module comprised of

- a model editor, provisioned with a simple public transport system ontology and semantic model
- a BPMN editor, provisioned with a sample security procedure consisting in sharing information between stakeholders (business process)
- the capability to automatically run the defined business processes, monitoring trigger conditions on webservices and executing relevant webservice commands in the SOA environment. With the prototype configuration, this capability is mainly used to trigger exchange of relevant security information upon detection and qualification of a security incident.

The capacity complies with SECUR-ED open interface specifications defined in D41.2 (R[11]), enabling easy integration in any SOA environment. The document also describes the proposed implementations of such a capacity within real systems for the various SP4 demos.

The prototype may also be interfaced with a simulated multimodal exchange node environment and may therefore also be used for simulation purposes in order to test and improve security procedures, as in Milan scenario 3 demonstration of SECUR-ED.

Conclusions finally discuss the potential benefits and limitations of the proposed solution, which should be evaluated in real environment during the demonstrations.

Document name:	D35.1 - Multi-operator data exchange capacity – PUBLIC SUMMARY				Page 3 of 3
Reference:	SCR-WP35-D-THA-010-PS	Dissemination:	PU	Version:	4.0
		Status:	Issued		