AVOIDING
AND MITIGATING
SAFETY RISKS
IN URBAN
ENVIRONMENTS

Deliverable D3.6

City.Risks SDK

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Executive Summary

This deliverable is the outcome of the work performed under Task 3.6 "City.Risks SDK". This task covers the implementation of the City.Risks SDK according to the architecture designed in Task 2.5.

The **City.Risks** SDK is a "software development kit" for cities and developers that aims at enabling new services and applications to be rapidly developed, scaled and reused by providing a range of tools and information for both cities and developers. The City.Risks SDK is a tool complimentary to the API delivered in Deliverable 3.1 allowing third party developers to access the City.Risks core platform data and functionalities.

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1. Description of Components Included in the SDK

The SDK includes essential tools for interacting and building applications upon the City.Risks platform.

The SDK is deployed in the domain:

git@optical01.telecom.ece.ntua.gr:root/sdk.git

The SDK was developed for the JAVA programming language and uses the Eclipse IDE's available tools for debugging and visual editing.

By importing this project into Eclipse you have access to the developed functionality, and design in the form of jar and BPMN 2.0 files, specific processes over the City.Risks data. These processes will be then executed directly in the City.Risks core platform and give back the results to the third party developer.

1.1. Model and Services

The SDK builds upon the City.Risks Model and Services that was the result of Task3.1.

This enables the user to perform operations upon the City.Risks core system and data, in a far more elaborate way than a simple interaction with the REST API.

While the City.Risks core REST API, provides a way to enter, receive or update data from the system (HTTP POST, GET, PUT), the SDK offers the ability to design more elaborate operations and processes which are executed directly in the core systems back end.

1.2. BPMN editing

The SDK is built upon the Activiti Designer Plugin [1] for the Eclipse IDE. Activiti is a light-weight workflow and Business Process Management platform that offers a fast and agile BMPN 2 process engine for Java, that is able to run in any Java, on servers, clusters or cloud, and easily integratable with Spring. It is open-source and distributed under the Apache Licence.

For the purposes of City.Risks the Activiti tool was edited to offer only service tasks that are attuned with the CityRisks model and services. A java service task is used to invoke an external Java Class. This class need to implement the *org.activiti.engine.delegate.JavaDelegate* interface and provide the required logic in the *execute* method. When process execution arrives at this particular step, it will execute this logic defined in that method and leave the activity in the default BPMN 2.0 way.

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[1] https://github.com/Activiti/Activiti-Designer

An example of this is shown in the figure below

List of Acronyms

Acronym	Explanation
BPMN	Business Process Model and Notation is a graphical representation for specifying business processes in a business process model
API	Application Programming Interface is a set of functions and procedures that allow the creation of applications which access the features or data of an operating system, application, or other service.
HTTP	Hypertext transfer protocol; the major communication protocol used by the World-Wide Web
ICT	Information & Communication Technologies
IDE	Integrated Development Environment
JSON	Javascript object notation
OSS	Open Source Software
RDBMS	Relational Data Base Management System
REST	Representational state transfer; a Web service interface paradigm based on the HTTP protocol
SDK	Software development kit; a set of APIs and tools used to build software applications
URL	Uniform resource locator; a unified way to address internet resources such as documents, images, Web pages or services