

# MEDES and Google Summer Of Code



All students and developers are welcome to participate in the [Google Summer of Code](#) program, with MEDES. Google Summer of Code is a program that offers student developers stipends to write code for various open source projects.

**For its activities, MEDES has developed an innovative data collection tool based on Open Source technologies: the Imogene solution.** This tool has enabled the deployment of information systems in various contexts that are now operational. The platform allows to rapidly design a data collection system and, based on MDA technologies, it allows to generate a set of applications fulfilling the needs specified by the model. The applications generated include:

- \* a Web application,
- \* an Android application,
- \* a Desktop application.

Both Android and Desktop applications can work offline and have bi-directional synchronization processes. They integrate remote update mechanisms.

Read more about **Imogene** on [our website](#) or at [code.google.com/p/imogene](http://code.google.com/p/imogene)

All our applications are developed using the Java programming language. You will have to work with Eclipse as Imogene is an Eclipse Plugin itself. A good knowledge of Java is required to apply to one of these projects.

The ideas below were contributed by our team. If you wish to submit a proposal based on these ideas, you can contact us and find out more about the particular suggestion you're looking at.

## **Project: Unit test project for the web generated application using Selenium**

**Brief explanation:** Each time a web application is generated using Imogene, the application needs to be tested. By generating a unit test project, this would automate the unit tests for a generated application allowing the users to validate the application functionalities.

**Expected results:** A specific generator to generate a unit test application for the web application using tools as Selenium.

**Used Technologies:** openArchitectureWare (oAW), Xpand, Eclipse Plugin, Eclipse Modelling Framework (EMF), Selenium

**Knowledge Prerequisite:** A good knowledge of Java is required. A knowledge on how to develop an Eclipse Plug-In is a plus.

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## Project: Adding a GIS module to the web generated application

**Brief explanation:** The Imogene platform allows to define forms as “georeferenced”. This means that geographical coordinates will be attached to this type of form. When such forms are defined in the model it would be interesting to visualize this piece of information of a map when using the web application that is generated. The android generated application already provides such a functionality, it can be used as an example.

**Expected results:** A GIS module integrated in the generated web application that will allow the users to display georeferenced forms on a map, pick a form from a map, list forms in an area. When using the Web application in a self container for offline mode, the GIS module components must work in offline mode.

**Used Technologies:** openArchitectureWare (oAW), Xpand, Eclipse Plugin, Eclipse Modelling Framework (EMF), Google Web Toolkit (GWT), OpenLayers, OpenStreetMap (OSM)

**Knowledge Prerequisite:** A good knowledge of Java is required.

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## Project: Online modeling and generation

**Brief explanation:** The Imogene platform provides an editor based on EMF that allows the user to model a data collection information system. Based on this model, the platform enables to generate the different applications that will make the IS. The editor is an Eclipse plugin that has to be installed in an Eclipse environment. The goal of the project is to make

the modeling and generation processes available on the web so that users may be able to mode and generate their sets of applications in their brother.

**Expected results:** A web application that will allow the edition of an Imogene model from a web browser. The editor must include all features already present in the Eclipse plugin such as validation, drag and drop, copy/paste... The application will also allow the user to generate the data collection applications and make them available for download.

**Used Technologies:** Remote Application Platform (RAP), Eclipse Plugin, Eclipse Modelling Framework (EMF)

**Knowledge Prerequisite:** A good knowledge of Java is required.

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## Project: Migrating to Acceleo

**Brief explanation:** Based on an EMF model, the Imogene studio is using openArchitectureWare and the Xpand language to generate the set of applications that will build up the IS. The goal of the project is to migrate from these technologies to Acceleo which is newer and provides more functionalities. At a first stage, the student will concentrate his efforts on migrating the generator of the web application to Acceleo.

**Expected results:** At least, the migration of the web application generator to Acceleo. At best, the migration of the web, android, and synchronisation generators to Acceleo.

**Used Technologies:** openArchitectureWare (oAW), Xpand, Eclipse Plugin, Eclipse Modelling Framework (EMF), Acceleo

**Knowledge Prerequisite:** A good knowledge of Java is required.

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## Project: Replication compatibility with a NoSQL database

**Brief explanation:** The synchronisation protocol between offline applications and the server is using web services based on the CouchDB API documentation. The goal of the project is to make the replicationcompatible between a CouchDB database and the Imogene generated REST application so that data can be synchronized both ways between a relational database and a NoSQL database.

**Expected results:** The REST web services must be compatible with the CouchDB REST API web services so that the databases can be synchronized both ways. Each database can be used a client or server.

**Used Technologies:** Jackson, CouchDB, NoSQL, Relational Database

**Knowledge Prerequisite:** A good knowledge of Java is required.

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## Project: JPA optimisation

**Brief explanation:** The data persistence layer of the Imogene generated applications is done using JPA. For reasons of ease some annotations do not follow the JPA documentation, in particular in the way of dealing with both side relationships. The goal of the project is to fully respect the JPA documentation in the POJOs annotations and deal with the difficulties in managing the both side relationships between Java beans.

**Expected results:** The JPA mapping of the generated applications will comply the JPA documentation. This should lead to optimize as well the Hibernate Envers behaviour.

**Used Technologies:** JPA, Hibernate, Hibernate Envers

**Knowledge Prerequisite:** A good knowledge of Java is required.

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## Project: SMS based synchronization

**Brief explanation:** The data synchronization between offline applications and the server is using HTTP REST web services. The goal of the project is to provide a basic SMS synchronization process so that phone based applications would be able to replicate their data using SMS messages.

**Expected results:** At least, the android application will give the user the option to synchronize over HTTP or using SMS. Forms will be sent to the server using SMS. At best, the server will provide a SMS API that the mobile application will be able to query to load changes that occurs on the server side.

**Used Technologies:** Android

**Knowledge Prerequisite:** A good knowledge of Java is required.

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