

# InaSAFE

## Quick Developer Guide

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6 May 2014

# Introduction

# Prerequisites

- Comfortable with **software development**
- Experience on **Python**
- Basic knowledge of **QGIS**

# State of the project

- The current released version 2.0. It was released in February 2014.
- The documentation related to the latest released version: <http://www.inasafe.org>
- The documentation that is generated from develop branch of inasafe-doc:  
<http://test.inasafe.org>

# Developers Communication

- IRC Channel: Freenode [#inasafe](#)
- Google Group:  
<https://groups.google.com/forum/#!forum/inasafe-dev>
- Github:  
<http://www.github.com/AIFDR/inasafe>

# Setting Up Development Environment

# Components

- **Major:**
  - PyQt4 for GUI
  - PyQGIS API to access QGIS functionalities using Python
- **Other components:**
  - Git, rsync, pep8, nosetests (with coverage plugin), python-numpy (for numerical computations), python-gdal (python bindings to underlying gis functionality), python-sphinx (compilation of documents), cloud-sptheme (sphinx theme), pyqt4-dev-tools (compiling ui and resources), qt4-doc (qt4 API documentation), pyflakes (test for bad coding style like unused imports / vars), python-nosexcover and python-coverage (code coverage reporting)

# Setting Up

- **General Steps:**
  - QGIS Installation,
  - All needed components installation,
  - Checking out local InaSAFE and test data on QGIS plugin folder / symlink it
  - IDE configuration (For PyCharm we can use a Pro license which is provided by JetBrains for open source project. Thanks JetBrains!)
- Linux:  
[http://inasafe.org/en/developer-docs/platform\\_linux.html](http://inasafe.org/en/developer-docs/platform_linux.html)
- Windows:  
[http://inasafe.org/en/developer-docs/platform\\_windows.html](http://inasafe.org/en/developer-docs/platform_windows.html)
- OSX:  
[http://inasafe.org/en/developer-docs/platform\\_osx.html](http://inasafe.org/en/developer-docs/platform_osx.html)



# Working Environment

- Coding Standards:

[http://test.inasafe.org/en/developer-docs/coding\\_standards.html](http://test.inasafe.org/en/developer-docs/coding_standards.html)

- New git workflow:

<https://github.com/AIFDR/inasafe/issues/821>

- Internationalisation:

<http://test.inasafe.org/en/developer-docs/i18n.html>

# Git workflow

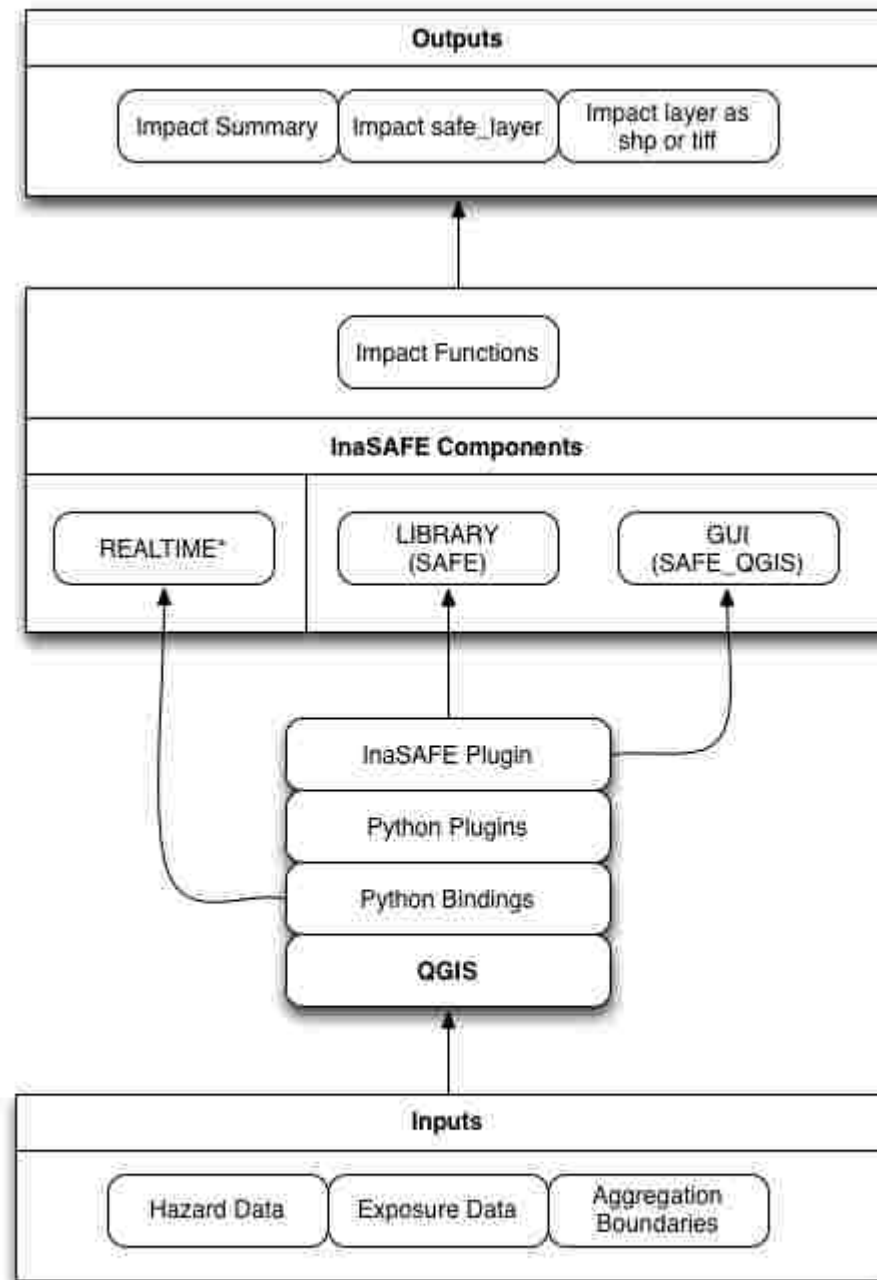
The screenshot displays the GitHub interface for the repository 'AIFDR / inasafe'. At the top, it shows 'PUBLIC' status, repository name, and interaction buttons: 'Unwatch' (36), 'Unstar' (55), and 'Fork' (41). The repository name is 'inasafe' and the current branch is 'develop'. Statistics show 7,213 commits, 10 branches, 27 releases, and 28 contributors.

A 'Switch branches/tags' dialog box is open, showing a search field and a list of branches. The 'develop' branch is selected. Other branches listed include 'master', 'version-0\_1', 'version-0\_2', 'version-0\_3', 'version-0\_4', 'version-0\_5', 'version-1\_0', 'version-1\_1', and 'version-1\_2'.

The commit history on the right shows a list of commits with their messages and timestamps. The most recent commit is 'edf7ddb8ec' from 3 months ago. Other notable commits include 'palette-images to prevent plugin bundle b...' (2 months ago), 'te files...' (2 months ago), 'a year ago', '2 months ago', 'a day ago', '3 days ago', 'a day ago', '5 months ago', '2 years ago', '9 months ago', '2 years ago', '3 months ago', '4 months ago', '2 years ago', '2 days ago', '13 days ago', '9 months ago', and '10 months ago'.

On the right side, there are sections for 'Code', 'Issues' (196), 'Pull Requests' (2), 'Pulse', 'Graphs', 'Network', and 'Settings'. Below these is the 'SSH clone URL' section with the URL 'git@github.com:AIF/inasafe' and a 'Download ZIP' button.

# Basic Concepts of InaSAFE



## InaSAFE High Level Architecture

\* Realtime is only used on server based deployments.

# IF Input Combination

Impact Function	Category	Sub Category	Layer Type	Data Type	Units
Categorised Hazard Population Impact Function	Hazard	All	Raster	Numeric	Normalised
Earthquake Building Impact Function	Hazard	Earthquake	Raster, Vector	Numeric, Polygon	MMI
ITB Fatality Function	Hazard	Earthquake	Raster	Numeric	MMI
PAG Fatality Function	Hazard	Earthquake	Raster	Numeric	MMI
Flood Building Impact Function	Hazard	Flood, Tsunami	Raster, Vector	Numeric, Polygon	Metres, Wet/Dry, Feet
Flood Evacuation Function	Hazard	Flood, Tsunami	Raster	Numeric	Metres
Flood Evacuation Function Vector Hazard	Hazard	Flood, Tsunami	Vector	Polygon	Wet/Dry
Flood Native Polygon Experimental Function	Hazard	Flood, Tsunami	Vector	Polygon	Wet/Dry
Flood Raster Roads Experimental Function	Hazard	Flood, Tsunami	Raster	Numeric	Metres, Feet
Flood Vector Roads Experimental Function	Hazard	Flood, Tsunami	Vector	Polygon	Wet/Dry
Categorised Hazard Population Impact Function	Exposure	Population	Raster	Numeric	People per pixel
Flood Evacuation Function	Exposure	Population	Raster	Numeric	People per pixel
Flood Evacuation Function Vector Hazard	Exposure	Population	Raster	Numeric	People per pixel
ITB Fatality Function	Exposure	Population	Raster	Numeric	People per pixel
PAG Fatality Function	Exposure	Population	Raster	Numeric	People per pixel
Volcano Polygon Hazard Population	Exposure	Population	Raster	Numeric	People per pixel
Flood Raster Roads Experimental Function	Exposure	Road	Vector	Line	Road Type
Flood Vector Roads Experimental Function	Exposure	Road	Vector	Line	Road Type
Earthquake Building Impact Function	Exposure	Structure	Vector	Polygon	Building Type
Flood Building Impact Function	Exposure	Structure	Vector	Polygon	Building Type
Flood Native Polygon Experimental Function	Exposure	Structure	Vector	Polygon	Building Type
Volcano Building Impact	Exposure	Structure	Vector	Polygon	Building Type
Volcano Building Impact	Hazard	Volcano	Vector	Polygon, Point	Low/Medium/High
Volcano Polygon Hazard Population	Hazard	Volcano	Vector	Polygon, Point	Low/Medium/High

# Codes Overview

- IF Volcano Population
- `assign_hazard_values_to_exposure_data`
- `interpolate_polygon_raster`