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Service Validation

D11.1 - Validation report for EC and international users



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Purpose of the Document

This document is the deliverable 11.1 Validation report for EC and international users, outcome of the WP11, Service Validation. It contains the description of the outcomes and conclusion of the validation missions carried out with international users in the framework of RASOR.

International users considered for this validation are the World Bank (WB), UNOSAT (United Nations Institute for Training and Research (UNITAR) Operational Satellite Applications Programme) and the European Commission's Joint Research Centre (JRC); two validation missions took place on in Washington and Geneva with the WB and UNOSAT respectively while the validation with JRC was carried out though a sequence of remote sessions.

The document summarizes the main outcomes of the three validation paths.





Table of Acronyms

Acronyms	Definition
DRR	Disaster Risk Reduction
EC	European Commission
EU	European Union
NGO	Non-governmental organizations
RASOR	Rapid Analysis and Spatialisation of Risk
RMS	Risk Management Solutions
UNOSAT	United Nations Institute for Training and Research (UNITAR) Operational Satellite Applications Programme
JRC	Joint Research Centre





1 Validation Mission World Bank-GDFRR, Washington (United State)

The visit to the World Bank-GDFRR was organized in two meetings, a first meeting with Francis Ghesquiere and Vivien Deparday and a second meeting with Melanie Simone Kappes Rashmin Gunasekera, Josef Lloyd Leitmann, Rick Murnane, Stuart Alexander Fraser, Brenden Jongman, Keiko Saito, Alanna Leigh Simpson, Simone Balog and Vivien Deparday.

Francis is part of RASOR's Advisory Board and Vivien is well aware of the project, so the first meeting was focused on the latest advancement of the project and technical improvements of the platform, including the Malawi success story and the beta version of the platform running the nearly finalized five case studies. The recent visit to Haiti and progress with CNIGS was also largely commented.

From the World Bank, the creation of a platform community is now essential to ensure its fast diffusion and adoption by local experts. To do so, it is necessary to create the social tools to create/reinforce the RASOR's network but also the necessary compatibility with the different databases of local information available. As an example, they see a lot of potential for the development of a kind of search engine integrated in RASOR and capable to look for information in the different libraries built by the World Bank. So, one of the opportunity of development for RASOR would be to optimize the integration of these libraries, a good case study could be Malawi, where the World Bank is very active and has a lot of information of the south of the country. It could be interesting to run the platform with the local information they own. Another area of interest could be Sri Lanka.

In general, Francis and Vivien are very excited about knowing more about the platform and to see that the general concepts are very similar with tools they have developed or are developing.

The second meeting was a detailed demonstration of the platform conducted by Lauro. After the introduction of the project done by Andrew, highlighting the necessity to collaborate on this project, several technical questions from the World Bank led to Lauro's explanations about the main concepts and their implementation in the platform. Development languages used, basic format and compatibility were the main first points of interest of the World Bank's team. The use of Jango and Python, the compatibility with GeoNotes (allowing them to benefit from their computing power) seems to be in line with World Bank's preferences. The 100% open source code seems also to be a shared choice with World Bank's team. Actually, one of the first questions was how and when they could see the codes. It looks very interesting for them to be able to modify and adapt the codes to specific operations.





After the meeting, Vivien showed to the RASOR's team, Thinkhazard, a beta version of a DRR platform with a different objective than RASOR's platform but similar technical choices in terms of concept, languages and compatibility.

Lauro followed by a detailed description of the key features of the platform: selection and personalization of a disaster, generation of exposure layers, creation of scenarios and automatic generation of reports or comparatives reports.

The World Bank team was particularly impressed by the speed of the platform to run scenarios. They really appreciated the way RASOR's engine can compute very quickly based on adaptive processing (adaptable block's size of information). In the case of a hurricane, it was proposed to contact Jean Noel from Meteo France Guadeloupe, to get Grib files for storms (even if the main authority is Miami).

The team was also very interested in the several parameters that can be set up and easily modified.

Different points were made to differentiate the tool from other similar available applications such as Capra but also the possibility to generate models or information in other software and then used them in RASOR.

Finally, Lauro presented the generation of reports with the example of Genova, showing the similarities with real damages and the interest of using the platform in this kind of situation.

Vivien was impressed by the work done on the platform since the last meeting, nearly all the modules were implemented and running efficiently. The platform looked very robust to her. A lot of technical or conceptual choices really matched with their recent developments such as the platform InSafe. They were also very interested in the different solutions that RASOR provides to the user such as the optimization of the use of internet by scheduling the processing of simulations at a favorable time or the option of using the simulations generated by the platform offline or the creation of an application with limited features and so access to internet.

They specially appreciated the flexibility of the platform, as a basic user of the models and scenarios generation or as an expert generating new data. They insisted on the idea of creating a community comprised of experts and users. They also recommended continue working on the visibility/access of the information, having all the layers available could be confusing to a basic user.

As the team wanted to get more in detail with a lot of technical aspects and evaluate together more options of collaboration a new conference call was planned for January.





They insisted in the option of using the platform in Malawi or Sri Lanka for flooding analysis in the region of Colombo and Batticalao heartquake or Mozambique considered as a very good candidate for remote sensing technology (contact Michelle Matera). The team mentioned different development that could be interesting to link to RASOR's platform: Inasafe or Padre Geoportal.

With the World Bank, Global Facility for Disaster Reduction and Recovery (GFDRR), RASOR has made significant progress in establishing the Bank and GFDRR as solid RASOR users. A 1/2 day working session was held in Washington in December 2015, and a further telcon was held in February 2016 to validate Bank use of RASOR through in-depth exposure to the tool functionalities and capabilities. A formal validation session was not held, as the GFDRR has been closely associated with the development of its own tool, InaSAFE, a desktop tool for improve geospatial work on risk reduction. At the UR2016 meeting in May 2016, the core team of InaSAFE developers and managers met for several hours with the RASOR management and informatics development team and charted a path forward for increased collaboration between the two tools. It was recognized that RASOR is the premier tool for risk assessment analysis, whereas InaSAFE offers stronger offline functionality and a robust but simple means of determining the viability of risk reduction measures. In particular, InaSAFE layers can serve as input for more complex risk assessment within RASOR. As well, the tools share the need for widespread access to open data sets at local levels, especially exposure data sets. The two teams agreed to pursue in partnership the increased availability of data sets by making them more easily accessible from each others platforms. The RASOR team agreed to host the lead InaSAFE developer at CIMA/ACROTEC HQ for a week in 2016 in order to work together on a joint implementation plan for closer collaboration and to link the tools intrinsically so that they might be used within the same Community of Practice. On the subject of Community of Practice, RASOR held the inaugural meeting of its CoP on May 17th, and invited InaSAFE practitioners to join this community so that it may be broadened to include representation from InaSAFE and other tools. In conclusion, the InaSAFE team recognized the excellence and utility of RASOR and welcomed the opportunity to pursue community development in a collaborative fashion, as well as ensuring that future developments of the tools (InaSAFE and related tools and RASOR) is collaborative and coordinated.





2 Validation Mission UNOSAT, Geneva (Switzerland)

On January 26th a validation mission was undertaken in Geneva at UNOSAT premises in order to make the point about the status of the RASOR platform ad to discuss functions and use of the Platform into the workflow of UNOSAT. The validation was positive and two main streams of cooperation were found: First the use of the RASOR impact computations into the Rapid mapping that UNOSAT develops for the UN system including the new avenues of it like the Flood finder project that enables to guide the acquisition of Satellite imagery on the basis of a forecasting tool in order to speed up delineation and grading maps production from satellites; the second into the capacity building program that UNOSAT develops for various countries on Disaster Risk Reduction topics.

In this second case UNOSAT identifies RASOR as a natural tool to offer both capacity building and training courses. Such a tool has been deemed so important that UNOST asked formally to join the phase 2 of the RASOR project and already agreed to use the tool into this year capacity building program in Africa and South east Asia.

In this context UNOSAT prepared a case study in Chad, more specifically a recent flooding event in Ndjamena, to be used in September 2016 at the first capacity building workshop in Addis Ababa delivered for IGAD and ICPAC. The case study has been presented in Venice at the inaugural meeting of the RASOR Community of Practice and the presentation is attached to this deliverable.



RAPID ANALYSIS AND SPATIALISATION OF RISK

Figure 1 Exposure from Open street map loaded and characterized in the RASOR platform: Ndjamena urban area (Chad)





Figure 2 Economic damage computed by the RASOR Platform in Ndjamena: overall damage and details; hazard has been provided to RASOR by the FloodFinder System





3 Validation with JRC

The European Commission's Joint Research Centre (JRC) has been the 3rd international end user that helped defining the RASOR Platform Functionalities. There was no possibility to organize a specific validation mission to JRC but several skype conferences underwent between CIMA and JRC to analyze and validate the tool. These contact took place mainly in the last two months of development, this due also to the willingness of JRC in trying to use the platform in some operational context.

Two cases were taken. The first one is a recent 7.8M earthquake in Ecuador in April 2016. JRC Reason for interest in the event: the event was classified as ORANGE in GDACS, but caused great amount of damage and casualties. A more precise estimate from RASOR could (potentially) affect or change the alert level. This was in fact the case as RASOR estimated around 5 billions damage, which would have caused the alert to change to red. The estimate was within the spectrum of the estimate given by different entities on the territory. The second was Typhoon HAIYAN in the Philippines, 2013, where we have well-measured economic cost, damage, casualties, and therefore it very useful to validate and calibrate the methodologies. In this case JRC tried to estimate numbers directly form maps produced by the Copernicus EMS rapid mapping activation in some locations near Tacloban.

Both examples have been presented at the inaugural meeting of the RASOR community of practice in Venice and served as a further discussion/development with JRC. Two main roads for development have been identified:

- the use of the RASOR libraries to compile a table with indexes to improve the GDACS alert and reporting;
- the use of the RASOR downstream the EFAS/GLOFAS modelling chain for the impact evaluation in near Real time;

for both implementing lines joint work is needed in the near future between JRC and the RASOR Consortium.







Figure 3 Direct Damage computed with RASOR on the basis of the GDACS available Information: Hazard from USGS web services¹, Exposure and Vulnerability from the Global Assessment report /GAR²): Ecuador.



¹ http://earthquake.usgs.gov/earthquakes/shakemap/

² http://www.preventionweb.net/english/hyogo/gar/2015/en/home/



Economic Damage (Content) [\$] per Building Usage

Generic_residential	37,225,203 \$
Generic_government	6,763,015 \$
School	3,913,298 \$
Religious_building	2,046,387 \$
Generic_commercial	1,845,167 \$
Generic_industrial	1,589,762 \$
Generic_medical_care_facilities	905,815 \$



Figure 4 Economic damage breakdown by occupancy type computed by RASOR, report screenshot: Ecuador.





4 Conclusions/Implications for RASOR

The three validation missions are opening sustainability paths for RASOR. The WB has already begun investing in RASOR implementations in Africa: Malawi, Mozambique, Mali and Cape Verde. UNOSAT has already committed to use the platform in its capacity building programmes and in integration with the Flood Finder tool. JRC is interested in implementing RASOR libraries in the context of both GDACS and the Copernicus EMS.



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