Objectives & Interfaces to other disciplines

Objective
Development of an Early Warning and Response System for epidemiological diseases by development of a Spatial Decision Support System in OpenSource.

Scienists of different disciplines are involved in the project.

Logistic
If there is a epidemological disaster, it is important to distribute the medical goods and services according to risk.

Geography
Geographic information systems are needed to generate risk maps and store locations of resources.

Epidemiology
Spatial modelling of epidemiological spread. and If there is a very less number of medical doctors in the areas of the epidemological disaster, medicals could help to create a user interface that allows to not-medicals to help ill people, especially if the infection is easily treatable.

Psychology
Psychlogists focus on knowledge representation, knowledge management and help to customize the user interfaces, to optimize medical treatment, when medical experts are not available.

Environmental Science
Environmental conditions affect the life cycle of vectors (like Mosquitos). These environmental variables determine the risk map in the GIS.

People & Website

Persons in the Project
Gerhard Ackermann (Integrated Logistic Support)
Dipl. Ing. David Niehaus (Datenmodellierung, Softwarekonzeption)
Dr. med. Ruth Niehaus (medical system analysis)
Prof. Dr. Engelbert Niehaus (mathematical modelling)
Dr. Ralf Wagner (Components of a Spatial-Toolbox for processing geocoded mapping information in the context of decision support)
Dipl. Ing. (FH) Matthias Größler (Logistic Optimisation in Public Health with the Application of GIS and Mathematic Modeling)
Dipl. Uwi. Jörg Rapp (Human diseases and exposure to pesticides in developing countries: temporal spatial analysis and risk maps of diseases and spatial application patterns of pesticides)
Dipl. math. Marwa Najem (mathematical risk managementt)
Melanie Platz (Mathematical Modelling of GIS-tailored GUI Design with the Application of spatial Fuzzy Logic)

Cooperation
Prof. Dr. Marlien Herselman (CSIR, Pretoria, South Africa)
Prof. Dr. Ajit N. Babu (Associate Professor of Medicine at St. Louis University, Adjunct Professor of Medicine, University at Buffalo)
Prof. Dr. Pascal Michel (Public Health Agency, Canada, Government & University of Montreal)

Website
More Information is available on

http://reglan-health.uni-landau.de/

ReGLaN-Health & Logistics

Mathematical Modelling of Early Warning and Response

University of Koblenz-Landau
Campus Landau

UNIVERSITÄT
KOBLENZ · LANDAU

Mathematische
Modellbildung
(Sek II & Fach)

Stand: November 2013

Project Description

What is EWARS (Early Warning and Response System)?

An Early Warning and Response System (EWARS) focuses on risk mapping for epidemiological early warning and logisitical optimized response according to risk. In the current status of EWARS will be under the umbrella of United Nations, Action Team 6.

What Type of System is EWARS?

EWARS is a Decision Support System (DSS) Risk and Resource are considered to be spatially distributed. Locations are stored in a Geographic Information System (GIS). Combining the concepts of a DSS and GIS is denoted as a Spatial Decision Support System (SDSS)

EWARS = GIS + DSS = SDSS
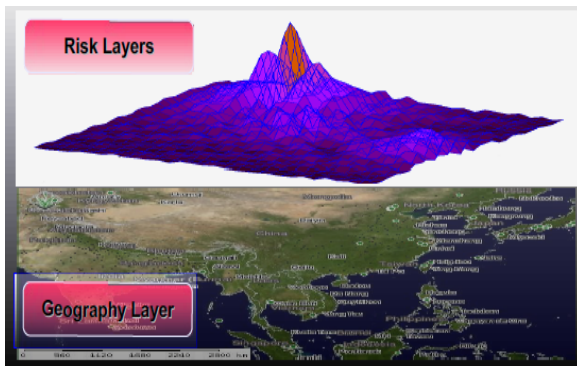
OpenSource & OpenContent

OpenSource & OpenContent

Implementation and support for implementation will be realized in OpenSource and OpenContent, so that developing countries can use, apply and modify the SDSS according to individual needs.

OpenSource GIS

GRASS Geographical Resources Analysis and Support System is the basic software environment to store and visualize spatio-temporal data.

OpenSource Statistics R

GRASS has an Interface to R so that spatio-temporal analysis can operate on GIS data.

OpenMoko Mobile Computing

OpenMoko provide linux distribution for mobile devices with GSM-cellphone connectivity, GPS-receiver, Wifi, Bluetooth. The mobile devices serve as mobile decision support clients that receive decision support according to user and spatial location in a risk map.

OpenStreetMap

OpenStreetMap (OSM) are maps that can be used for routing analysis and optimization of logisitical distribution of medical goods and services.

Target Group
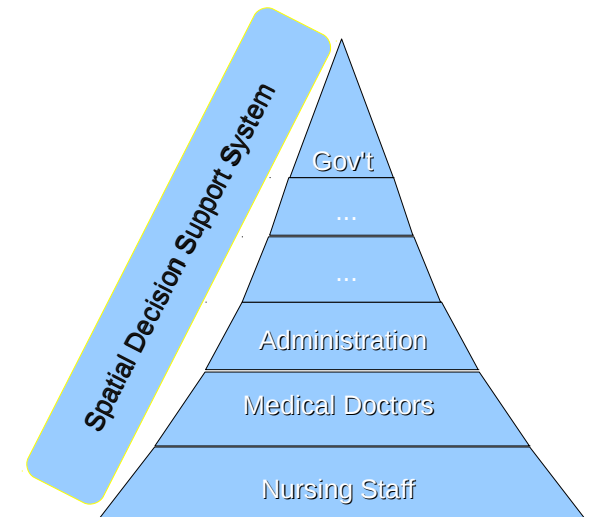
Goverment as Decision Maker

Government has to make decision on country a regional level for coordinating response measures according to risk

Administration Hospitals & in Disaster Management

In epidemiological and disaster situations distribution of resources has to done with permantly update priorities for an optimized response.

Medical Doctor

The decision support system helps to allocate resource according to individual needs.

Medical Staff

Support Medical for self-protection and provide information on preparation for upcoming disasters.