How easy can information management be?

By Dave Paul Zervaas

Perhaps the creation of information services does not always have to be that complicated.

There are many complex information services that offer us a wide variety of products and results. Geographic Information System (GIS) packages are based on conceptual models, algorithms and advanced software that require significant financial and human resources to be developed. There are countless examples showing that currently, the creation and subsequent implementation of information systems and services may represent an arduous task even for those organizations that have all types of resources.

Undoubtedly, there are situations when there is no alternative to complexity. The recreation of meteorological scenarios requires complex mathematical models, and the number of calculations is so great that only the most advanced and expensive information systems are able to forecast the weather efficiently and, even so, they are reliable only on rare occasions if such forecasts go beyond 10 days. Along these lines, Google, the well-known internet search engine, requires thousands of employees, computers, servers and other resources to produce its results.

There are problems that need exact solutions to be really solved. The case of a spaceship placed in orbit above Mars represents such an example. In many occasions, very accurate solutions need hundreds of millions of calculations and operations per second. There are other problems that are not easy to grasp and, although they appear to be less complicated, might include algorithms that require hours, days or months to come up with a satisfactory solution.

How a simple problem could cost …

Suppose that the purpose of a particular software is to generate and determine all likely combinations containing 7 variables (which can be repeated) from a list of 45, and then, assess whether these combinations will generate any relevant information, such as saving in costs, or any other useful information, depending on the particular problem.

It turns out that for this problem, which at fist sight may seem rather simple, a computer may well require lots of time. In fact, if calculating one single combination only requires one millionth of a second, analyzing and solving the entire problem requires at least 104 hours (more than 4 days)!

Sometimes it is easy to feel intimidated by information technology, and think that those institutions without substantial resources will never be able to develop attractive and useful information services.

Fortunately, reality shows that there are also many cases and situations in which it is possible to achieve very satisfactory results with less ambitious services. When solving problems it is often possible to use relatively simple algorithms that, although less accurate than their advanced counterparts, operate thousands of times faster. It is also feasible to simplify many complex problems and generate solutions that address most scenarios for a given domain.

In daily life it happens frequently that even small pieces of information -as modest and limited as they can be- will facilitate decision-making. How many times haven't we come to realize that a little bit more knowledge of the context in which we move may help us cope with a problem much more efficiently?

Knowing the context may facilitate acquisition of meaning...

Imagine that you are asked to find a particular person among a group of people. The characteristics of the person you are seeking are not noticeably distinctive from others, because it is a person without any exceptional physical features or clothing. If the group is made up of 1,000 people, you will have to assess each of them. In this case, the searching strategy will most likely be one by one. If assessing each one of them takes you one second, you will need an average of 500 seconds to find that person.
*Processing time: (a*N)/2, where 'a' represents the processing time per information unit, and N is the number of units. For example: (1*1000)/2=500 seconds.*

However, if you knew that this person wears a yellow hat (an uncommon feature among this group), your searching strategy could be much faster. Generally, the time required for doing the search in a similar situation is a great deal less than when there is no additional information available which would enable you optimize your strategy. In this example, you might finish 20 times faster.
The processing time would be as follows: (a(N/b))/2 where 'a' represents the processing time per information unit (in this case, a subgroup of people), N is the number of units and 'b' is the average size of the group of units to be processed in one single visual scanning step. For example: (2*(1000/40))/2=25 seconds.*

It may seem that the above has little or nothing to do with disaster mitigation, but there is a different aspect to it. In the following paragraphs, we will see how.

Quality is not always high-cost

In many parts of the world, particularly in developing countries and regions, clear, easy-to-access and low-cost information is a precious resource valued by many people and institutions. In places that lack access to disaster

information systems, a new web site or system with basic information on institutional contacts and disaster prevention, represents great progress. Regarding the origin of the information, it does not have to come from high-technology or expensive sources. For example, risk maps that are prepared by communities themselves, without the use of advanced technologies or geographic information systems, can be very effective as disaster prevention instruments, and the process of developing them may activate social and community processes that would not be possible without broad-based community participation. In fact, the outcome of a community process may be a high degree of motivation and involvement in activities aimed at reducing vulnerability to existing threats.

In terms of information management, we also have a number of choices. Relatively simple but effective services requiring little investment may suffice to meet many of the needs of those people that are interested in disaster prevention. It is quite possible to think of and create realatively simple products that respond very well to a particular need. It is feasible to do this in a small information center with very few staff members, including a person knowledgeable of information technology. It is also possible to make use of certain services that already exist on the internet and which often may be used for free.

A good example of developing a modest but still useful information service may be the creation of a web site or page containing good quality information of the following categories:

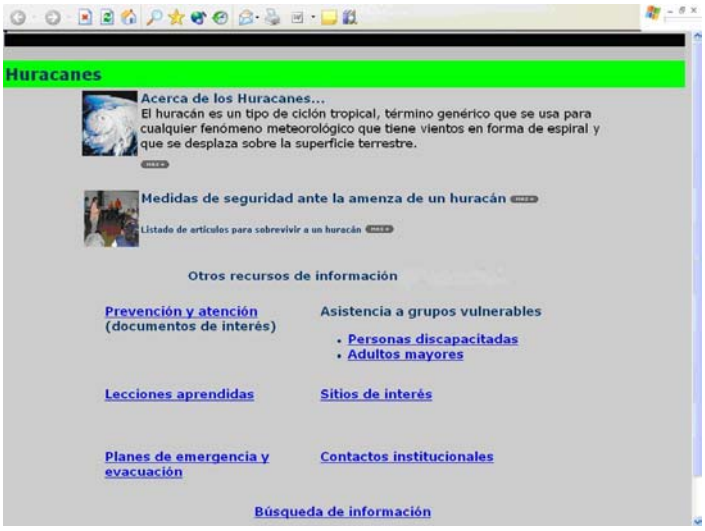
- A contact list, which doesn't need to be long in order to be useful and practical. This list can be used as a reference for locating institutions and people who work in the areas of disaster preparedness, mitigation and response.

- A list of links to a number of other websites on related issues, such as meteorological forecasts.

- Basic information on news and phenomena to which the webpage makes reference. This information may include documents, opinions or a list of recommendations.

- If the website's collection grows, it will be probably be convenient to include a search service, which can be obtained for free, or use a basic search engine developed in-house. If the volume of files in your site does not exceed a couple of thousand, rather basic search engines usually are more than enough to meet most user needs.

The following is an example of a basic web page on hurricanes, which contains a few sections covering those areas that would likely be of interest to most users.



Example of an easy-start up basic service

As can be seen, this web page is divided into reasonably clear sections. It contains elementary information on hurricanes, security measures, and sections related to prevention, assistance to special groups, sites of interest and contacts. It also includes an information search option.

A web page like this one may be of use to quite a large audience as long as information is reviewed and updated periodically. Access to clear information in a timely and straightforward manner is probably much more important than technological sophistication itself. From an information technology standpoint, the set-up of a service similar to that of the example is not all that complex, and basic training should suffice for the necessary institutional capacity building and for production of web pages.

An advantage of starting simple is that services can be developed gradually and in accordance with the institution's own capacities and availability of human and technological resources. Furthermore, a small website, such as the one pictured in the figure above, does not even require its own server, as it could be managed by a web-hosting company for a low fee, generally less that US$ 100 per year. In a later stage, as institutional capacities increase, more features may be added to the website.

In fact, basic information services can be created satisfactorily with little or no additional investment in software, and it can be done rather quickly, too. There are other advantages associated with a modest but efficient start-up: it fosters motivation, creativity and a sense of 'ownership' of those who offer the internet-based information services. And these are important factors for stimulating sustainability.

Another alternative is using 'Website Content Managers', which allow you to free yourself from many technical aspects when designing and maintaining a web page or site. As such, it offers a convenient working model in which experience in information technology is not required for

updating the contents of a website. In general, the only thing to do is modify, add or update the information to be posted on the Internet, through the use of automated forms that can be accessed from anywhere, allowing work to be done from a distant location. These tools are not always adequate for all types of tasks and have some limitations. Nevertheless, they can be extremely useful in places where there are no, or not enough, skilled human resources in information technology.

These Website Content Managers can be obtained commercially or for free at a number of websites. One of those sites is http://opensourcecms.com/, which offers a variety of alternatives at no cost. To see a concrete example in action, visit the following website: http://cidbimena.desastres.hn/. This site belongs to one of the centers associated with the Central American Network for Disaster and Health Information.

Advancing step by step

Although the services described above may be very useful, there are other information centers (incipient or with experience) and institutions that wish to expand the scope of their services, as well as improve their technological development capacities. Along these lines, even for institutions with limited technical and financial resources there are several working models that are appropriate for responding to a growing demand for information. These models usually address one or more of the following aspects:

- Training and capacity building for creating and/or implementing technical tools.
- Use of commercial or low-cost (or free) open source tools.
- Information management training.
- Production and dissemination of specific low, medium and high-technology information products.
- Knowledge transfer techniques to help other institutions become part of functional networks.

One working model was created by CRID within the framework of the 'Central American Network for Disaster and Health Information' project. This project has accumulated a large variety of experience and lessons learned regarding the set-up and management of information centers in several Central American countries. In order to help institutions benefit from this experience and knowledge, an educational and reference toolkit will be developed, covering many relevant aspects that relate to setting up and operating a disaster information center.

This tool will mainly address initiatives in the areas of disasters and health, but may well be applicable to other fields of sustainable development as well.

A new toolkit will be developed to help create and manage small- and medium-sized information centers …

The Regional Disaster Information Center for Latin America and the Caribbean (CRID) offers training material and guides, which can be obtained through its website. Recently published was a new training package entitled 'Disaster Information Management: Work Model and Tools'.

During 2004 and early 2005, CRID will develop a toolkit that focusses on the set-up and management of disaster information centers. Although the material is aimed at managing information centers that specilize in the area of disasters, it will most probably be of use in other areas as well.

The toolkit addresses the following thematic areas:

I.- The link between disasters and information
II.- Management of information centers
III.- Information management
IV.- Working methodologies
V.- Knowledge transfer

Several working models will be explored and the material will also include special features, such as rural education resources for disseminating information. It will be available in early 2005.

Information and guidelines included in this toolkit draw on real-life experience and incorporate work and strategies that are transparent, low-cost, and well adapted to the social and institutional realities that prevail in many developing countries.

Efforts made in the field of disaster reduction involve the broad-based participation of many social stakeholders who cope with both recurrent and changing situations. In order to ensure that the management, planning and implementation of activities aimed at reducing disasters is effective, it is essential to offer reliable, good quality and updated information to managers and others working in this field. Some of the areas of work where the efficient dissemination of quality information is paramount are: risk management, the design of early warning systems, community education, and health management in disaster situations. Information dissemination is also key to coordinating agencies that work in the field of disaster reduction.

For further information, please contact:
Dave Paul Zervaas
General Coordinator, CRID and
Regional Information Officer, ISDR
dave.zervaas@crid.or.cr