Generating Metadata: saving money in the organizations

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OVERVIEW

The main purpose of this study is to quantify the final costs and benefits in the process of geographic metadata creation.

The study is focussed on the personnel involved in the process: hours invested, directly or indirectly, and salaries. Also it considers the personnel training concerning the program and the standard.

We try to demonstrate that the process of metadata creation is not as expensive as expected and it can generate savings.

IDEC personnel

Companies usually have only one person in charge of metadata creation. IDEC, in many cases, has given support to the Responsible.

Time

We divide the time in two parts:

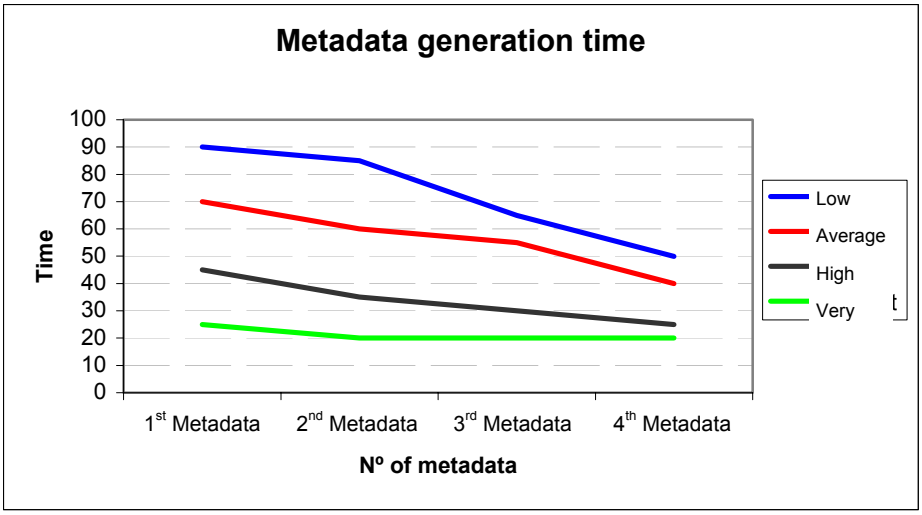
- Time Planning (to arrange which information has to be public and decide the best way to introduce/display it).
- Metadata creation time

A good knowledge of the standard and the practice in the process of metadata creation reduces, remarkably, the time in this phase (see Table 1).

METADATA CREATION TIME (Minutes)					
Nº Personnel	**Knowledge**	**1st Metadata**	**2nd Metadata**	**3rd Metadata**	**4th Metadata**
1	Low	90	85	65	50
1	Average	70	60	55	40
1	High	45	35	30	25
1	Very High	25	20	20	20

Table 1: metadata creation time

Next graphic shows, visually, the content of the Table 1. In the Y-axis, there are the minutes and in the X-axis, there are the numbers of metadata creation. The lines indicate the production time.



Graphic 1: Metadata generation time

In these lines we can observe a common guideline: the reduction of the time between the first and the last metadata.

Average costs

The following table shows the average costs to generate metadata (according to the time of table 1). To make this study, we take a basic salary of around 2400 €. Costs to create metadata are classified in two parts: direct and indirect.

		ESTIMATED COSTS OF METADATA *GENERATION (€)*			
Nº Personnel	**Category**	**1st Metadata**	**2nd Metadata**	**3rd Metadata**	**4th Metadata**
1	1	11,67	10	9,67	6,67
1	2	8,75	7,5	6,87	5
1	3	3,21	2,75	2,52	1,83

Table 2. Estimated costs of metadata generation by categories and an average knowledge.

PRACTICAL CASE

Time planning

We have to consider the time in planning the metadata creation and how to arrange the existing information properly.

This process can be very variable since different cases can happen in each company. Below you may see two examples of different organizations.

METADATOS TIME PLANNING				
	Metadata and Software introduction	**Structuring of the required information.**	**Advising**	**Compilation of the required information**
Planeta Actimedia	1:30	10	0:40	10
IMI	4	20	10	0:30

Table 3: Metadatos time planning

The classified hours as *Metadata and Software Introduction* includes IDEC project and its purposes, a demonstration of MetaD software as well as an explanation about metadata.

Structuring of the required information includes the structure of the company database or its available information.

The third phase is *Advising*. Once the information has been arranged the IDEC adviser makes a proposal about the way to document the information.

And, finally, the *Compilation of the required information*. This is the previous step for metadata creation. This phase includes the information that GIS Technician doesn't know (legal information, prices, sales procedures or any other information unknown by the technician).

Metadata generation time

As you may see in Table 4, GIS technician has assigned a higher time of the average during metadata creation.

		METADATA CREATION TIME (hours)			
Nº Personnel	***Knowledge***	**1st Metadata**	**2nd Metadata**	**3rd Metadata**	**4th Metadata**
1	Low	3	2	1:30	1:25

Table 4: Metadata generation time by an inexpert

Costs

Sometimes, companies consider metadata a burden task, a problem that they don't want to assume. For this reason, the task that IDEC personnel is doing is very important since IDEC promotes metadata creation in Catalonia.

Indirect costs

Table 4 shows indirect costs referred to metadata creation in two different organizations (Note: the economic costs of table 5 are the result of dividing the invested time in planning by the cost/hour of an employee).

INDIRECT COSTS ON METADATA CREATION (Euros)

	Metadata and Software introduction	Structuring of the required information.	Advising	Compilation of the required information	TOTAL
Planeta Actimedia	15	100	6,67	100	**221,67**
IMI	40	200	100	5	**345**

Table 5. Indirect costs: Metadata creation planning

In Table 5, you can observe that costs are very different between companies. Some companies invest more time to structure information and others to plan it.

Direct costs

In our case, the company created 17 metadata. The cost to generate these metadata is showed in table 6.

DIRECTS COSTS TO GENERATE METADATA (Euros)			
Metadata	***Cost / hour***	***Invest. hours***	***Costs***
1st	10	3	30,0
2nd	10	2	20,0
3rd	10	1:30	15,0
4th	10	1:25	14,2
5th	10	1:25	14,2
6th	10	1:25	14,2
7th	10	1:20	13,3
8th	10	1:20	13,3
9th	10	1:10	11,7
10th	10	1:10	11,7
11th	10	1:10	11,7
12th	10	1:05	10,8
13th	10	1:05	10,8
14th	10	1	10,0
15th	10	1	10,0
16th	10	1	10,0
17th	10	0:50	8,3
TOTAL		**22:55**	**229,2**

Table 6. Direct costs to generate metadata.

We will have to sum up direct and indirect costs to obtain the final costs to create metadata. You may see this information in next table.

FINAL COSTS TO GENERATE METADATA (Euros)		
Indirect costs	**Direct costs**	**TOTAL**
221,67	229,17	**450,84**

Table 7. Final costs to generate metadata.

The benefits

Now, we comment a hypothetic case to try to demonstrate, quantitatively, that the investment made by a company in metadata creation can be easily recovered.

We know that to generate metadata a company has to invest around 450 €. We know too that an employee has a cost of 15 €/hour. Therefore, if we divide the total cost (450 €) by the cost/hour of the employee**,** we obtain the hours that the company will have to invest to request the information to balance costs. In this case, the result will be 30 hours.

Therefore, if only one employee devotes 30 hours per year to request information, the company will have recovered the investment made in metadata creation and planning. In other words, if an employee spend two hours and a half per month to request information at the end of the year will sum up 30 hours.

The time devoted to balance costs will vary according to cost/hour stated by the company. If cost/hour is lower than 15€ the required time to cover 450 euros will be higher; whereas if cost/hour is higher than 15€ the required time will be lower.

In this case the company, subsidiary of a group of companies, is in charge of producing the cartography and the geographic information of this Group. So, in some occasions (according to the project that they are developing) its own departments or the Group subsidiary companies ask for information about data (which kind of cartography they have, thematic information, structure and volume of data...)

They have calculated that they devote around 8 hours per month answering this type of questions (96 hours/year). Starting from this information, we will calculate the cost of this task multiplying 96 hours/year by 15 euros/hour that the employee spends answering the questions on our data. The result is 1440 €/year. If we subtract the 450 € (final cost to generate metadata), the result is an economic saving of 990 €/year.

The company obtains both economic and time saving. It had to spend 30 hours as minimum to search or request the information to balance costs. Considering that the searching time is 96 hours/year, the time saving will be euros 66 hours/year. If we multiply 66 hours/year by 15 €/hour the result will be 990 € of saving per year.

Summarizing, the investment that this company has made in metadata ,creating and planning, will be balanced in less than four months. In a short or medium term the company will have savings.

CONCLUSION

The metadata and, by extension, the SDI, must contribute to revalue the geographic data, to increase the exchange information and the economic transactions of the spatial information producing companies.

Although, in other countries, SDI has been implanted successfully, many companies show certain distrust in concepts like "interoperability", "interchange", "metadata"... whether for excessive secrecy or the effort that supposes to implant these technologies.

This study has tried to demonstrate, by means of a practical case, that the cost of the metadata creation is not excessively high and, in addition, it's easily recoverable.

The metadata doesn't have to see like a disadvantage, nor like a loss time. They have to see like a showcase for the data and company, that it has to impel the commerce and the income of the producers. Therefore, they have to see like an investment, that will give results to short-term or middle-term.