

Benchmarking Cadastral Systems – Results of the Working Group 7.1

Jürg KAUFMANN, Switzerland

Key words:

ABSTRACT

In 1998, FIG-Commission 7 launched three new working groups for the period 1998-2002. Working group 7.1 got the title “Reforming the Cadastre” and its terms of reference were (i) to create a framework for the determination of progress and effectiveness of cadastral reforms, (ii) to develop key criteria to determine the benefits of cadastral reforms, and (iii) to actualize continually the Commission 7 inventory on cadastral systems.

To deal with items 1 and 2, the working group decided to use the benchmarking approach. Benchmarking is concerned with questions of effectiveness, efficiency, best practice and customer satisfaction. Item 3 has been dealt with a questionnaire for a standardized country report.

The paper describes the work being done and the progress that has been made by the working group. It gives an overview about the theoretical background of the method and procedures of benchmarking, the importance and usefulness of benchmarking in the field of cadastre, and the contribution of benchmarking to the FIG strategies. It shows how the working group tackled the topic of benchmarking and how it expects that benchmarking will be applied by the different countries. Some practical results of benchmarking operations carried out in different environments are shown as examples.

CONTACT

Jürg Kaufmann
KAUFMANN CONSULTING, Concepts and Project Management in Cadastre
Im Hauffeld 109
CH-8455 Rüdlingen
SWITZERLAND
Tel./ Fax + 41 1 867 34 89
E-mail: jkcons@swissonline.ch
Web site: <http://homepage.swissonline.ch/jkcons/>

Benchmarking Cadastral Systems – Results of the Working Group 7.1

Jürg KAUFMANN, Switzerland

INTRODUCTION

In 1998, FIG-Commission 7 launched three new working groups for the period 1998-2002. Working group 7.1 got the title “Reforming the Cadastre” and its terms of reference are:

1. to create a framework for the determination of progress and effectiveness of cadastral reforms;
2. to develop key criteria to determine the benefits of cadastral reforms;
3. and to actualize continually the Commission 7 inventory on cadastral systems.

The working group decided to apply the approach of benchmarking to deal with items 1 and 2. Benchmarking is concerned with questions of effectiveness, efficiency, best practice and customer satisfaction.

Item 3 is considered to be a permanent task of Commission 7, which started some years ago by asking standardized questions in the context of country reports by the delegates. The secretary of working group 7.1 takes care of this inventory and makes the information available on the homepage of working group 7.1. The material gathered may be used as a source for comparisons of different international solutions in the field of cadastre. It serves benchmarking as well.

WHAT IS BENCHMARKING IN GENERAL?

The working group based on the publications of Robert C. Camp [Camp, 1994], one of the pioneers of the benchmarking method. Camp works with several definitions, and the formal definition he uses is:

Benchmarking is the continuous process to measure products, services and practices against the strongest competitor or the companies considered as market leaders.

Webster in his dictionary defines benchmarking in a way that has a lot to do with surveying:: Benchmarking is surveying the mark of an earlier defined position and used as a reference point or standard against which something else is measured or assessed.

James G. Patterson, another benchmarking specialist explains in Benchmarking basics [Patterson, 1992] that:

Initially Benchmarking was a notion in land surveying. A benchmark in this context is a mark, which was mounted on a rock, a building or a wall. It was a reference mark to define the position or the height in topographic surveying or to determine the time for dislocation. Today a benchmark is a value against other things may be measured.

We can see from these definitions that benchmarking has a lot to do with our profession.

Camp's working definition of benchmarking is:

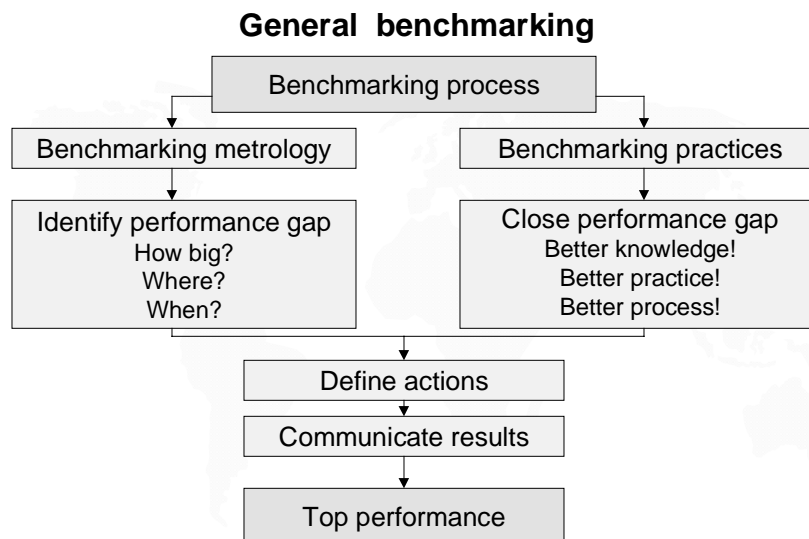
Benchmarking is the search for best practices leading to top performance.

The purpose of benchmarking for a company is therefore to detect weaknesses of its own organization by comparing indicators. Camp says that benchmarking is not a mechanism to save resources, nor a cure-all or a programme. Benchmarking is rather: A new way to act entrepreneurial, a new management approach, which enforces to use an external view to make sure that the defined targets are the correct ones.

Camp distinguishes between different types of benchmarking:

- **General benchmarking** as comparison of functions or processes;
- **Internal benchmarking** as comparison of internal sections of the enterprise;
- **Competition benchmarking** as comparison with direct competitors on the basis of products or functions;
- **Functional benchmarking** as comparison of similar functions within the branch or with leading organizations.

General benchmarking has the potential to identify best practices and is considered to create the best long-term benefit of all types of benchmarking.



1. Process of Benchmarking

And benchmarking is quite a normal process. We used benchmarking when we were children and looked how others did do and we use benchmarking every day to find better solutions to deal with a certain task. So there is no reason to consider benchmarking as mystic and highly sophisticated.

WHAT IS THE TECHNIQUE OF BENCHMARKING?

Process of Benchmarking

The process of benchmarking consists of two parts, a metrological one and a practical one (Figure 1). On the basis of information gathered on functions and processes, the performance gap can be identified and measured. A better understanding of the functions and processes may produce better approaches and practices. With this input, the action to be taken to improve the situation can be defined and communicated, and will lead to a performance, which is comparable to best practice.

Figure 3 illustrates a possible z-diagram in the field of land administration. The example shows the time it takes to subdivide a land parcel. It can be taken as a fact that the participants in the land market, that is the landowners, the real estate agencies, and the banks have an interest in the services to be carried out in the shortest possible time with sufficient reliability. If a given system is compared with another one, the focus will be the time needed to get the necessary working steps done from the time the application has been lodged with the organisation to the time the result is being delivered to the applicant. This time period is expected to be as short as possible. The shortest time found in the comparison may be the future benchmark, and the difference between my own procedure and the best one indicates the performance gap.

If the comparison also considers the past and the future, we can see in the example, whether a given system has in the past been perfectionised or if the performance became worse because of other reasons. Looking into the future, the performance in 2010 can be forecasted by taking into account the improvements achieved by further efforts or by technical developments.

The z-diagram not only shows the gap but also the total improvement necessary to stay competitive over the time.

The z-diagram can be used to investigate further indicators relevant for the improvement of services, products, procedures and organisations.

Steps of Benchmarking

The process of benchmarking is carried out in different stages and steps. The stages and steps are shown in figure 2.

In the planning stage, the topic to be benchmarked is defined and the functions and processes to be compared are identified. The framework for the acquisition and compilation of the

required data is defined and the data are collected.

The analysis stage serves to compile and compare the data and to identify weaknesses of the given situation by measuring the performance gap. The potential for improvement is investigated and estimated.

The integration stage is the communication of the results to the organization benchmarked and the definition of the goals to be achieved.

Finally in the action stage, an action plan is developed. This action plan is translated into action, during which adjustments might be necessary.

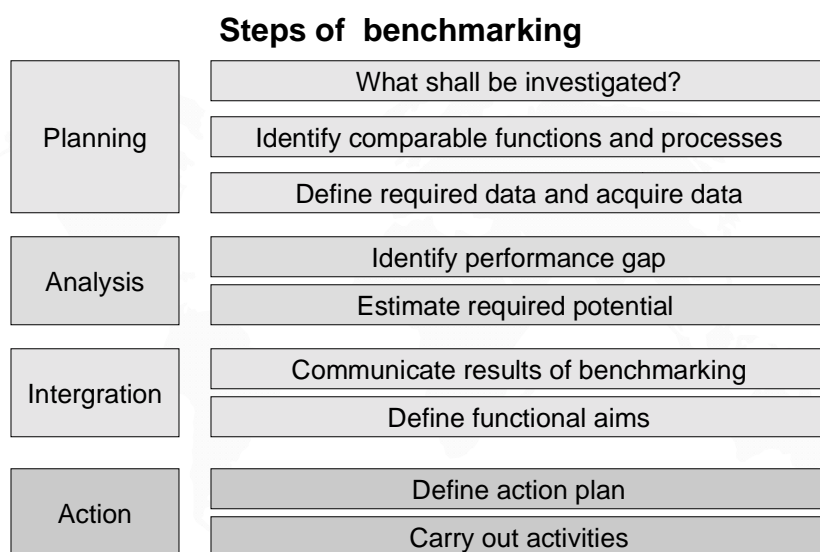
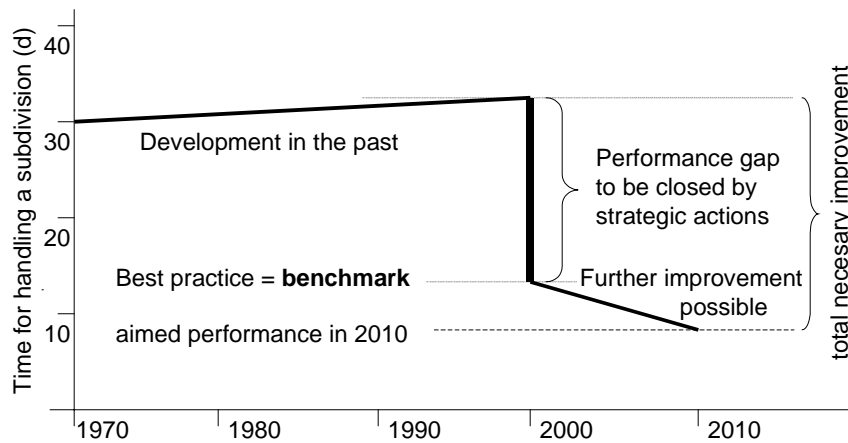


Figure 2. Stages and steps of benchmarking

Z- Diagram

One important result of the analysis is the z-diagram. It takes into consideration the past development which lead to the actual situation, shows the gap between the existing solution to the compared solutions resulting from the analysis of the data and estimates improvements possible by the continuous efforts. The gap must be closed by strategic actions.

Z-diagram



Jürg Kaufmann

Figure 3. Example of a z-diagram

The z-diagram shows not only the gap but also the total improvement necessary to stay competitive because it can be expected, that continuous efforts to improve the functions are taking place.

WHAT DOES BENCHMARKING MEAN IN THE FIELD OF CADASTRE?

For the cadastral organizations and the reform work done in the field of cadastre, it should be possible to measure the success with the help of clearly defined indicators and against generally accepted benchmarks.

Cadastral systems differ significantly worldwide. The countries have different cultural backgrounds and different legal systems. It is therefore difficult to compare the systems. However, cadastral systems have more or less the same characteristics: according to the official definition of OICRF:

Cadastrés are methodically arranged public inventories of data concerning properties within a certain country or district, based on a survey and geographic determination of their boundaries.

With the development of the visions for a future cadastral system, known as “Cadastre 2014”, the content of the traditional cadastral systems has been enlarged. Besides the traditional information on private property rights, the information resulting from public law – rights and restrictions – become part of a modern cadastral system. The future cadastre will be a systematic public inventory of all rights and restrictions concerning land and land resources.

We may call it “space cadastre” and it is a sort of multipurpose cadastre.

The definition of Cadastre 2014 is:

Cadastre is a methodically arranged public inventory of data concerning all rights and restrictions to land within a certain country or district, based on a survey and geographic determination of their boundaries.

The vision gained a widespread interest, and the brochure “Cadastre 2014” released in 1998 has been translated into 21 languages so far.

Based on the same principles as the traditional cadastral systems, the future space cadaster will guarantee the same reliability or – in other words – the same legal security of all rights and restrictions defined by any law dealing with spatial related aspects. It therefore can be assumed that these future “space cadastres” will be a benchmark against which the services, efficiency and performance are to be measured.

Independent from the type of cadastre, it is important that it is reliable, efficient and cost-effective. This means, that anybody using the services of the cadastre, expects to have the required results in a reasonable time and at reasonable cost. And he will be able to rely on the cadastre. The indicators we are looking for will have to cover these aspects.

WHY IS BENCHMARKING OF CADASTRAL SYSTEMS USEFUL?

With a worldwide perspective, the situation in the field of cadastre is rather inhomogeneous. Next to perfectly functioning systems, we find incomplete and partial systems. In countries with colonial backgrounds, cadastres often only cover the colonized land taking into consideration the traditional and customary rights existing in parallel. Other countries – mainly those in transition – have to build up cadastral systems from scratch. And in other countries, the cadastral systems have been destroyed due to conflicts and have to be re-established.

Cadastral systems, where they exist, have a long lasting tradition, in most cases over more than a century. Over this long time period, the systems have been improved and perfectionized. The perfectionism created a certain heaviness and often the performance does not keep up with the customers needs. Nowadays, in the era of globalization the decisions concerning land resource matters have to be taken much faster than it used to be in earlier times. The big interest in Cadastre 2014 also shows, that the traditional systems often and more and more do not correspond to such new requirements.

Where partial cadastral systems exist, they have to be completed in order to cover the whole territory. Only when complete and covering the whole territory, they can serve society in a beneficial way. In these cases, it must also be discussed at the same time, if the contents of the systems are sufficient to provide the needed services.

Where customary and traditional rights exist in parallel, these must be taken into

consideration.

When cadastral systems are to be newly introduced, there is a need to design a complete new solution providing the appropriate services over a long period of time to come. Where a re-establishment of the cadastral system is necessary, the question often arises if it is sufficient to have the earlier situation restored.

In all of the aforementioned cases, the changes caused by the development of the technology especially the IT are to be taken in consideration. All these activities are different forms of cadastral reforms. And in the situation of reforms it makes sense to search for the best solution. Benchmarking can help to identify best practices and to find the best solution for a given problem.

DOES BENCHMARKING CONTRIBUTE TO THE STRATEGIES OF FIG?

The aim of FIG is to ensure that the disciplines of surveying and all who practice them meet the needs of the market and communities that they serve. This aim is realized by promoting the professional practice and by encouraging the development of professional standards.

The current work plan focuses on the surveyor's response to social response to social, economic, technological, and environmental change and the particular needs of countries in transition. The plan lays emphasis on strengthening professional institutions; promoting professional development; and encouraging surveyors to acquire new skills and techniques so that they may be properly equipped to meet the needs of society and the environment. [FIG, 2001].

Benchmarking helps to meet the needs. Functions and processes are improved because there is a need for better services. To look for better practice is a continuous task of a profession. With benchmarking it is easier to identify better solutions by taking into consideration what others already have achieved. The existing experience can then be used to improve the own organization's performance.

Benchmarking therefore promotes the professional practice and supports the development of professional standards.

HOW DOES WORKING GROUP 7.1 DEAL WITH BENCHMARKING?

Working group 7.1 adopted for its work the type of general benchmarking. This means that important functions and processes of the different national cadastral systems are compared with each other.

The aim of the work is not to measure the success of cadastral efforts and reforms for individual approaches and solutions or to denominate best practices. The idea is rather to create a framework to show indicators and to suggest procedures to enable FIG and its member associations to carry out benchmarking operations, to identify weaknesses of their

own processes and hopefully to find best practices to strengthen their own system.

With the help of these tools, comparisons between different countries have been carried out based on information gathered by questionnaires and the national reports delivered by national organizations and delegates to Commission 7.

Results created with these tools shall show the facts for comparison of different approaches and solutions. The interpretation and assessment of the results, however, have to be left up to the players and stakeholders in his field.

WHAT ARE THE RESULTS?

The work on benchmarking has started, before the working group 7.1 (1998-2002) formally took up its work. On the basis of information gathered for the work on Cadastre 2014, a first data collection has been carried out in the year 1997. These results have been published in the paper Benchmarking Cadastral Systems [Stuedler et al, 1997].

There were positive as well as negative reactions following this publication. The issue of comparing different systems has been put on the agenda and discussion began within FIG. The establishment of working group 7.1 (1998/2002) certainly was a result of this discussion. Daniel Stuedler, the secretary of the working group has started to work on a PhD thesis related with this topic. In view of the comparison of different solutions he developed a set of indicators to be used in the benchmarking process [Stuedler 2001].

The working group was responsible for a one day seminar on Reforming and Benchmarking Cadastral Systems – Measuring the Success' held jointly with the Working Party on Land Administration (WPLA) in Gävle, Sweden during the annual meeting 2001 of Commission 7. The results of the studies, the one day seminar in Gävle, Sweden and some practical national examples for Benchmarking are published under the title 'Benchmarking Cadastral Systems'. The data material on investigations on cadastral systems is available on www.swisstopo.ch/fig/wg-71/.

REFERENCES

- Camp Robert C. [1989]**, *Benchmarking: the search for Industry best Practices that lead to superior performance*, ASQC Quality Press 1989
- FIG [2001]** *Introduction of FIG*, FIG Working Week 2001 International Federation of Surveyors, 30. April 2001, Seoul
- Patterson. James G. [1992]**, *Benchmarking basics*, Crisp Publications, Inc, Menlo Park, California, USA
- Stuedler, D., I.P. Williamson, J. Kaufmann, D. Grant [1997]** Benchmarking Cadastral Systems. The Australian Surveyor, Vol. 42, No. 3, Sept.
- Stuedler, D., I.P. Williamson [2001]** *A Framework for Benchmarking Cadastral Systems*, Presentation in the seminar 'Reforming and Benchmarking the Cadastre: Measuring the Success June 13, 2001', June 2001

BIOGRAPHICAL NOTES

Jürg Kaufmann, born 1942, is a graduate from the Swiss Federal Institute of Technology and he absolved additional studies in economy and commerce. He runs his own company KAUFMANN CONSULTING working for public and private institutions in the field of cadastre and geomatics in Switzerland and abroad. Jürg Kaufmann represents Switzerland in FIG's Commission 7 and chaired the working groups producing the publications 'Cadastre 2014' and 'Benchmarking Cadastral Systems'.