

Abstract # 011-0800

Geographical Reference supporting Fraud Detection in the
Telecom Industry

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POMS 20th Annual Conference

Orlando, Florida U.S.A.

May 1 to May 4, 2009

Abstract

Fraud detection in the Telecom industry is a continuous effort to identify and stop unauthorized use.

This real case shows how geographical tools helped one of the World's Largest Telecom companies to better identify and prevent fraud using daily operations data layered over geographical maps in conjunction with on line performance dashboards.

1. Introduction

The process of fraud detection in the telecom industry has greatly evolved in recent years [2, 4]. Companies are storing all log calls allowing them to identify patterns and trends to be proactively addressed to avoid future losses. This is primarily done by setting up the technology [3] that enables storing the data and the pertaining statistical analysis.

Information technologies systems propelled by data warehouse [1, 4], data mining and business intelligence [3, 4], among other tools, support these initiatives.

Every day new fraud alerts are issued by such systems.

2. The learning pyramid

It has been learned that through real experience the learning process is improved.

It is possible to learn by just hearing. Unfortunately most of us will easily forget what has been heard.

It is also possible to learn by reading. Fortunately by reading our learning experience follows our own pace while allowing us to better impress those new ideas to our minds.

But ultimately by experimenting what we have heard and read we learn.

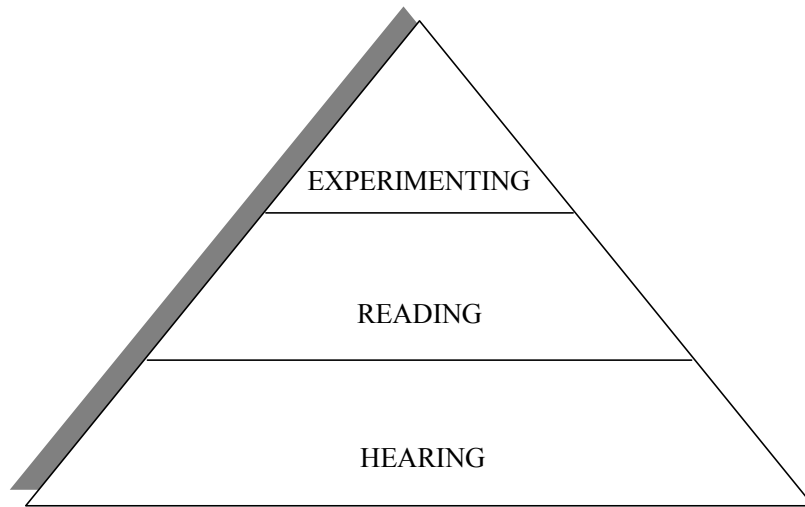


Figure 1 - The Learning Pyramid

2. The teaching triangle

There are three supporting points to the teaching process:

- research
- experimentation
- feedback

It is desirable to teach what has been have previously researched, experimented and discussed with others.

If one of the points is missing the teaching process might be affected by not appropriately surrounding those willing to learn.

That's why experimentation in real companies have become a key component in the learning-teaching process.

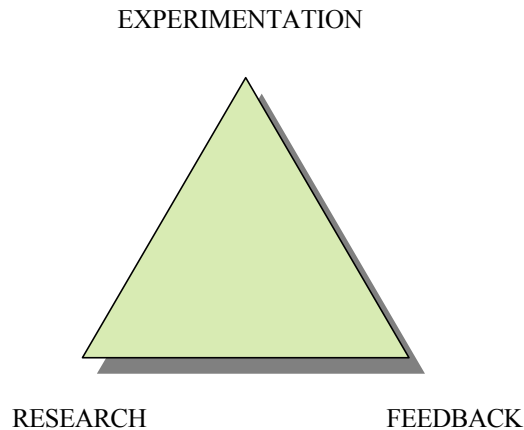


Figure 2 - The Teaching Triangle

3. The challenge

This real case takes place at one of the most prestigious telecom companies in the world.

At the company fraud department a team of five professionals who are experts in fine tuning fraud detection automated filters would take a full month of work to analyze a single day of phone calls' log and their respective filters' efficiency.

The huge amount of historical data actually available poses new challenges to the ability of managers and his team members to appropriately keep track of those filters efficiently.

Hiring 150 people just to analyze, every month, all those phone calls' logs does not present itself as a reasonable cost.

Another relevant cost was related to the fraud investigation process.

It was mandatory to improve this process in order to be able to analyze, every day, all daily phone calls' logs while decreasing the number of open cases to be further investigated.

4. The adopted solution

It was clear to the top executives at that corporation that a new approach to manage the fraud detection process should be taken in order to maximize results without hiring new people or expanding investigation expenses.

It has been proven that graphical information is much easier to be analyzed and that it holds the ability to summarize large amounts of data.

Dashboards and geographical maps were combined with color coded marks to present in an easy to view screen what was happening every day.

These maps (see appendix) are updated daily representing what happened the day before. It identifies how many cases and where they occurred.

The dashboards provide added features by indicating what the expected results versus the real ones are.

The adopted solution allows managers to identify if their decisions towards frauds are producing the desired results.

5. The benefits

These multilayered maps facilitated the managers' job to quickly identify issues to be addressed in a daily basis allowing them ideal responsiveness.

In the past, managers would know one month later what happened, in a single day, thirty days later.

Now, managers know what happened yesterday, everyday.

By analyzing the filters' efficiency everyday those filters are now much better tuned avoiding false alarms and the associated investigation costs.

The maps visualization allowed managers to identify a new dimension in fraud detection while allowing a safer interconnection to other carriers.

This geographical service combined with the dashboards on top of the data warehouse and data mining processes saved the company US\$ 10,500,000 in cost reductions (people, physical facilities, etc.) plus US\$ 10,000,000 in losses due frauds.

6. Conclusion

Through this real case, it was exemplified that by applying information technology companies can reduce costs and increase revenues.

However, new studies must be carried out involving other companies in different markets aiming to expand the geographical information systems application to businesses.

7. Acknowledgments

Many academic professors and business professionals shared with the author their ideas about geographical information systems combined with business intelligence.

This knowledge sharing process allowed the author to experience his theories while dealing with this real case.

To all those friends, many thanks for sharing their experiences while allowing the author to experience by himself.

8. References

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8. Appendix

Example: Map used for geographical reference supporting fraud detection

