

# **Implementing Software Metrics at a Telecommunications Company — A Case Study**

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## **EXECUTIVE SUMMARY**

Establishing and using fundamental measures of software development progress is an essential part of being able to predictably produce high-quality customer-satisfying software within a reasonable agreed-to timeframe. However, in many organizations such measurement is done incompletely or not at all. While various forces encourage measurement programs, others form barriers to such implementation.

This case study explores a formal metrics program established to track and analyze the development of a new version for the major voicemail product of a mid-sized telecommunications company. The study addresses the evolution of the company's organizational structure and culture that led to the adoption of the program, the components and structure of the program, the implementation of the program, its effects on product quality and timeliness, and what happened thereafter. The study also raises questions with respect to facilitating an organizational atmosphere where a metrics program can flourish.

## **BACKGROUND**

This case study investigates a formal metrics program established to track and analyze the development of the major voicemail product for a mid-sized telecommunications-related company, which we shall call "Telogics." It is described from the point of view of the Metrics Lead for the program.

The study describes how, in an overall downward trend for process and quality assurance, a window of opportunity can open to carry out significant product-enhancing work in these areas. It also raises the issue of how to preserve the gains and historical memory when the window closes and the downward trend guarantees that it will not reopen in the near future.

Aside from the use of metrics to improve the development of a major software product, three other major themes appear in this case:

1. The slow but steady absorption after the merger of two companies of one legacy company by the other one, and the organization evolution brought about but this absorption.
2. The shift by Telogics away from a mature product with a large but static customer base to a multiple line of older and newer products with many new customers, and prospective markets, with an accompanying refocus of Telogics from engineering-driven to market-driven). This maturation of product line with an accompanying flattening of revenues and shift toward new products is occurring within much of the telecommunications industry, not just Telogics.
3. The implementation of a major quality process in a major division of Telogics as the company itself was moving away from a process/quality orientation due to its changing products and organization, and the economic adversity being visited on it and many other companies in the telecommunications industry.

Telogics makes communications systems and software that phone companies use to offer call answering, voice or fax mail, communications surveillance and recording, and other services. Currently (from financial reports in early 2003 for the year 2002), it has around \$750 million in revenue, with around \$180 million in operating losses and about 4,800 employees. During the period of the case study (approximately the year 2000), it had approximately \$1.2 billion in revenue, with around \$250 million in operating income and about 6,000 employees. It started in the 1980s as a company producing a large-scale voicemail system.

During the case study period its products were based on two versions of this voicemail system, and they were beginning to branch out into new products such as text-to-speech and intelligent-network applications. It is currently continuing this expansion of its product range, as well as revamping its voicemail-based product after since having eliminated one of the two original versions. As with many telecommunication-based companies, its profits and stock price, very high during the case study period, began declining near the end of that period and has since significantly declined. However, the price is currently stable at the lower level. The corporate organizational structure has evolved over Telogics' history. Because of the key impact this had on the existence, form, and progress of the metrics program, the organizational evolution during the 1998-2001 timeframe is tracked in detail in this case study.

## History

For most of the time in its earlier years, the style of the company (we shall call the company in its earlier years "Techanswering") was the traditional "cowboy" or "death march" one, very much at the initial process level in the Capability Maturity Model (Humphrey, 1989). There was hardly any process, a lot of what was there were in people's

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