A Practical Procedure for Introducing Data Collection (with examples from Maintenance)

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Abstract

This paper describes the experience of the authors in data collection activities, both on collaborative research projects and internal to the STC corporation. On the basis of this experience, we define a procedure for the introduction of data collection schemes. Examples, based on metricating the maintenance phase, are provided.
INTRODUCTION

The ideas and methods described in this paper are the results of the involvement of the authors in major software data collection exercises in the United Kingdom and Europe, and the knowledge gained in the application of the principles established by those exercises to industrial situations within the STC corporation.

This paper describes a mechanism and a process by which one can make a start on the introduction of measurement and control into industrial software development. As a consequence of effective and useful data collection a broader spectrum of information should be available providing a sounder basis for software engineering.

The data collection exercises were done in the Alvey sponsored SoftWare Data Library (SWDL) and the ESPRIT sponsored REQUEST (REliab ility and QUality in European Software Technology) projects. The SWDL project was wholly concerned with the collection of software data. It set up a pilot scheme which was to have been followed by a commercial, non profit service. This has not yet been created. The REQUEST project was primarily concerned with research into Quality and Reliability, with data collection as a supporting activity. This project will end in January 1990.

Our industrial experience is based on our activities within our own corporation in support of productivity and quality initiatives, and the introduction of programmes such as the IPSE and Software Factory initiatives being undertaken within STC.

When, in 1985, we began to expand our data collection activities beyond the support of Mainframe Systems within ICL (where extensive data collection has been done for many years), the steps we thought necessary to establish an effective data collection programme, were:-

1. To define metrics and a data model for structuring metrics collection formally.

2. To define customisation concepts formally (so that a general data model could be fitted to specific environments) and regularisation concepts (so that data collected to differing definitions of a metric might be compared).

3. To discover effective means of motivating software developers and line managers to collect usable data.

4. To design an integrated activity for data collection and use, supported by suitable databases, tools manuals etc.