Control of Information and Communication Technology: an Integrity Problem

Views, perspectives, education and evaluation

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Abstract of the Invited Talk*

Information and communication technology (ICT) is on the move. Developments and improvements are introduced almost on a daily basis. Examples are Electronic Commerce, Internet and for instance client server technology. The management of organizations is confronted with these enhancements in technology and face new control problems. It is not easy to introduce new ICT in an organization and remodel the organization in such a way that management control remains in place. Controllability requires standardisation of control and security requirements and this is unfortunately for management possible at a strategical and tactical level and not at an operational level. A translation from tactical to operational level should be done by each company itself, however most of the times the experience in the organization is missing.

In the education of CPA's at Groningen State University (Netherlands) much attention is paid to the impact of the use of ICT on controllability and security as well as on audit. In more detail during the lecture attention will be paid to the topics as well as the contents of each. This means that until now the specific knowledge on these topics is available with CPA's (internal and external) who can define the standards and procedures needed in specific organizations.

* Due to a late invitation, prof. Neisingh has not have enough time to prepare a more extensive abstract that could be included in these proceedings. His paper has been distributed during the working conference. (LS, eds.)

A distinction needs to be made between the so-called general ICT controls which relate to organizational controls and procedures, logical access controls as well as physical control and security measures including emergency planning with regard to ICT on the one side and control and security measures implemented in automated information systems on the other. It should be understood that the automated parts of information systems which contains the programmed procedures are part of the system as a whole implemented in the user organization (user controls). It should be clear that the total of user controls and programmed procedures being application controls should guarantee users that processing takes place completely, accurate and authorised. However, in more and more situations the quality of processing depends on the quality of the general ICT controls.

The integrity problem which means data available at the system need to remain complete and accurate and only being modified by authorised persons depend on the quality of the general ICT controls as well as of the application controls in situations where the end user is not able to verify whether the processing has taken place in a correct way. In particular are of importance a test and acceptance procedure with regard to new and modified programs, back-up and recovery procedures, etc. In an on-line real-time environment integrity controls are of utmost importance. The system of internal controls and security with regard to safeguarding integrity will be discussed.