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On a Popular Myth: “Scientific Research Cannot be Subject to Quality Management”. Think Again! Who Says It Cannot Be?

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Abstract content
 (Max 300 words)

In many scientific research environments the popular belief seems to be that scientific research cannot be subject to so-called “quality” management, at least not down to the research operational level. Examples of popular arguments behind this belief include, “No, but a quality system can cover only routine work”, and “No, it is more important to perform the actual research than to waste time adhering to a quality system”.

This paper considers the above belief for the scenario where the research involves measurements or tests, e.g. by physicists, or other scientists. The realities are that: Researchers, research groups, their employers, and customers, or funders, are investing time, money, and other resources into particular research projects with the expectation of achievement of scientifically valid results, efficiently obtained; and the credibility of researchers, research groups and their managers depend on the scientific validity of their results. Furthermore, product design or development, or service offerings could rely on such results. Consistent achievement and reporting of scientifically valid results will not happen spontaneously, but is more likely achievable by having a suitable scientific management framework down to the research operational level. Ultimately the reporting of scientifically valid measurement or test results depends on a combination of factors, including the following (to name but a few): (1) That collection of valid raw data is achieved as basis to derive results from, (2) that equipment utilised is proven as suitably calibrated and performing correctly, (3) that suitable non routine and routine methods are applied and are documented, (4) that existing or custom written software are proven as providing valid output, (5) that the reporting of the results, e.g. as research reports, or articles, is appropriate, (6) sufficient record-keeping is practiced, and (7) that those who perform the work are either suitably qualified and experienced, or else suitably supervised.

Guidance towards a suitable management framework could possibly be taken from ISO/IEC 17025:2005. Although this management system standard has been designed with testing and calibration laboratories in mind, several of its requirements could be useful for guidance for other scientific research environments where research involves measurements or tests.

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Primary author: Mr THERON, Bertus (CSIR)

Presenter: Mr THERON, Bertus (CSIR)

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