



Fit for purpose quality management system for military forensic exploitation



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ABSTRACT

In a previous publication we described a systems approach to forensic science applied in the military domain. The forensic science 'system of systems' describes forensic science as a sub-system in the larger criminal justice, law enforcement, intelligence, and military systems, with quality management being an important supporting system. Quality management systems help to ensure that organisations achieve their objective and continually improve their capability. Components of forensic science quality management systems can include standardisation of processes, accreditation of facilities to national/international standards, and certification of personnel. A fit for purpose quality management system should be balanced to allow organisations to meet objectives, provide continuous improvement; mitigate risk; and impart a positive quality culture. Considerable attention over the last decades has been given to the need for forensic science quality management systems to meet criminal justice and law enforcement objectives. More recently, the need for the forensic quality management systems to meet forensic intelligence objectives has been considered. This paper, for the first time, discusses the need for a fit for purpose quality management system for military forensic exploitation.

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1. Introduction

In a previous publication [1] we outlined a systems approach to forensic science applied in the military domain. The forensic science 'system of systems' describes forensic science as a sub-system in the larger criminal justice, law enforcement, intelligence, and military systems. Supporting systems, such as quality management and risk management, are important components of the forensic science system of systems. An advantage of describing forensic science as a system of systems is that it has built-in redundancies, which provides a mechanism for organisations to mitigate against critical system failures. This paper expands on the system of systems approach and focuses on a fit for purpose military forensic quality management system.

1.1. Quality management systems

A quality management system is a set of policies, processes and procedures required for an organisation to meet its objectives and continually improve its capabilities [2]. The ISO 9000 series is the international standard that sets out the requirements for a quality management system and ISO 9001 sets out the quality management principles [3].

Critical system failures in the forensic science industry have resulted in miscarriage of justice and prompted reviews of forensic service delivery. These reviews have noted the importance of a forensic quality management system [4–13]. The National Academy of Science (NAS) Report on Strengthening Forensic Science in the United States: A Path Forward made 13 recommendations of which five related to quality management systems. Specifically, recommendation 8 was "that forensic laboratories establish routine quality assurance and quality control procedures to ensure the accuracy of forensic analyses and the work of forensic practitioners" [5].

A key recommendation from the NAS report was the establishment in the United States (US) of a National Institute of

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Forensic Science (NIFS) to address issues identified in the report [5]. While NIFS was never established due to financial constraints, some progress towards forensic quality management systems in the US has been made through the Subcommittee on Forensic Science, which operated until December 2012 [14], and the National Commission on Forensic Science (NCFS) from 2012 [15]. The US Attorney General has announced that the NCFS will not be renewed in favour of the appointment of a senior forensic adviser, efforts under an internal department crime task force, and a public comment period on advancing forensic science [16]. Until these new efforts have been articulated and implemented, it is unknown if they will address the recommendations in the NAS report.

The NAS report stressed that deficiencies in standardisation, certification of forensic practitioners and accreditation of facilities is impacting forensic quality [5]. A standard is “a document that provides requirements, specifications, guidelines or characteristics that can be used consistently to ensure that materials, products, processes and services are fit for their purpose” [17]. Standards are consensus documents that are not prescriptive and should not outline best practice, methodologies or set aspiration targets [18]. Application of ISO 9000 is not sufficient to meet forensic standards as there are additional forensic technical competencies that are not covered by the ISO 9000 series [19–23]. The most widely used standard in forensic science is ISO/IEC 17025 *General requirements for the competence of testing and calibration laboratories* [18,24]. The updated ISO 17025:2017 was published in November of 2017 [25] and the impact that the updated ISO 17025:2017 will have on the forensic industry will not be felt until the changes have been implemented and reviewed.

ISO/IEC 17020:2012 *Conformity assessment – Requirements for the operation of various types of bodies performing inspection* is applied to forensic crime scene investigation in some countries. The European Network of Forensic Science Institutes (ENFSI) has established guidelines for crime scene investigation based on ISO 17020 [26,27] and the United Kingdom (UK) Forensic Science Regulator is supporting implementation of ISO 17020 for the same discipline [28]. In Australia, accreditation to ISO 17020 was opposed by the forensic community due to the standard not covering assessment, which could occur at the crime scene or point of collection. The Australian accreditation body the National Association of Testing Authorities (NATA) does not accredit to ISO 17020 [24].

ISO 17025 and ISO 17020 are not specific to forensic science and have inherent limitations [18,24], which have been addressed by supplementary requirements produced by the International Laboratory Accreditation Cooperation (ILAC G19:08/2014) [24,29] and NATA [30]. In late 2000 in Australia, the now defunct Senior Managers of Australian and New Zealand Forensic Laboratories (SMANZFL) and the Australia New Zealand Policing Advisory Agency National Institute for Forensic Science (ANZPAA NIFS) pushed for Australian forensic science standards to further address the limitations of ISO 17025 when applied to forensic science [18,24]. The approach in Australia was to develop core forensic science standards, which includes Australian Standard (AS) 5388.1 Recognition, recording, recovery, transport and storage of material [19], AS 5388.2 Analysis and examination of material [20], AS 5388.3 Interpretation [21], and AS 5388.4 Reporting [22]. Under the Australian Standards forensic framework, the discipline specific standards refer to the core standards and do not repeat them [18,26].

The Australian approach to forensic science standards differs from the UK and US approach, which produce discipline specific standards [18]. In the US, a wide range of discipline specific standards have been produced by the ASTM International [31]. In the UK, the required quality standards for forensic science providers and practitioners in the criminal justice system are set out in detail in the codes of practice and conduct. The discipline

specific codes are practical guides on how to achieve the accepted standards. The codes of practice differ from standards in that they are not voluntary [32].

The UK House of Commons Select Committee Science and Technology Committee’s report “Forensic Science on Trial” recommended that a Forensic Science Advisory Council be established to act as a regulator of the forensic services market, and to provide a much needed overview of the process by which forensic science is used in the criminal justice system. This resulted in the creation of an independent forensic science regulator. The Science and Technology Committee urged the Government to provide the forensic science regulator with statutory powers to regulate and enforce forensic quality management systems. The UK Government has signalled its intent to provide statutory powers as soon as practicable [28,33]. The forensic science regulator has established timelines for all forensic service providers and practitioners in the UK to be compliant with the codes of practice through accreditation [32,34].

1.2. Accreditation

Accreditation of forensic science facilities is a voluntary program whereby a third party accreditation body reviews a facility’s quality management system. Accreditation bodies use standards documents to establish if the laboratory can competently perform the tests, examinations and measures for which accreditation is sought [35]. It is a means for formally recognising and promoting the competency of a forensic facility or field capability in relation to a specific activity. In Australia, NATA is the accreditation body and Australian forensic laboratories can now seek accreditation to ISO 17025 and AS 5388.1–4, with the Australian Federal Police (AFP) being the first organisation to be accredited against AS 5388.1–4. Under the NATA accreditation system, facilities must seek accreditation for all forensic tests that they conduct (i.e., it is a “one in, all in” approach) [36].

In Australia, forensic quality management has matured since the late 1990s, with the large majority of forensic providers to law enforcement and the criminal justice system being NATA accredited [24]. Reviews of the forensic industry [4–13] have recommended the need for forensic quality management systems; this recommendation is also applicable to the military forensic system. This provides the military with the opportunity to proactively review the need for fit for purpose forensic quality management systems, before there is a need as a result of critical system failures. The US Department of Defense has recognised the need to employ the highest forensic standards appropriate for the mission to ensure scientific objectivity, integrity, and quality [37,38]. The Australian Government Department of Defence does not currently conduct forensic exploitation operations under an integrated quality management system. The Defence Science and Technology (DST) Group has two laboratories at Fisherman’s Bend that are NATA accredited to ISO 17025. This includes the Air Division, Structures and Materials Test Centre, and the Land Division, Chemical Agents Analysis Facility [39]. The standards for these facilities are not integrated into the broader Australian Government Department of Defence (Defence) and there is a risk that if Defence does not operate under an integrated forensic quality management system then intelligence and potential prosecution objectives may be compromised.

Over the last decade, there has been considerable review of the need for quality management systems for forensic science delivery to law enforcement, the criminal justice system [4–13] and the intelligence system [40–42]. For the first time, this paper explores the need for a fit for purpose quality management system in the military domain to meet intelligence and potential prosecution objectives.

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