

Abstract

The Department of the Air Force (DAF) is confronted with the urgent need to adapt its service acquisition processes to the rapidly evolving landscape of information and technology. This necessitates the strategic integration of cutting-edge digital tools, presenting both challenges and opportunities. This study aims to identify the digital tools suitable for integration into the DAF service acquisition process through a systematic literature review and interviews. The findings culminate in a matrix illustrating the merging of digital tools within the DAF service acquisition process. The matrix is developed to map these tools to specific stages of the acquisition process, facilitating strategic alignment. Additionally, the study identifies and discusses the benefits and challenges associated with the adoption of digital tools. By synthesizing insights from literature and interviews, this research contributes to a comprehensive understanding of the opportunities and challenges in integrating digital tools into the DAF acquisition process. It concludes with recommendations for DAF leadership to apply to current and future digital tools and service acquisition decisions.

Methods

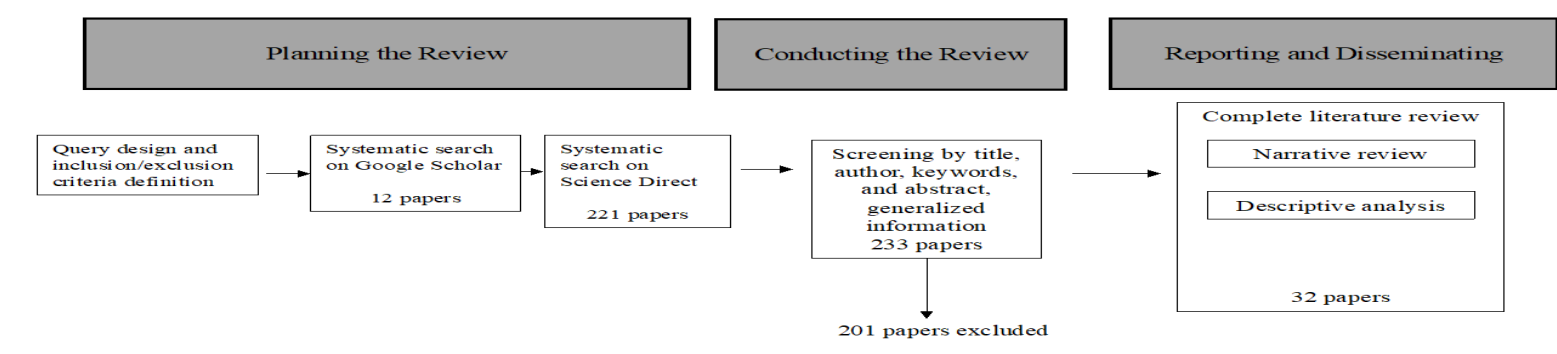


Figure 1 The Literature Review Process. Adapted from Guida et al. (2023).

- The research was conducted in two phases. Phase one was the systematic literature review of digital tools in service acquisitions. Phase two consisted of interviews with digital tools end users and digital tool developers about their experience with digital tools
- The results were used to create a matrix that integrates digital tools discussed in the procurement process and maps the digital tool(s) to one or more steps of the DAF service acquisition process.

Results & Their Impact

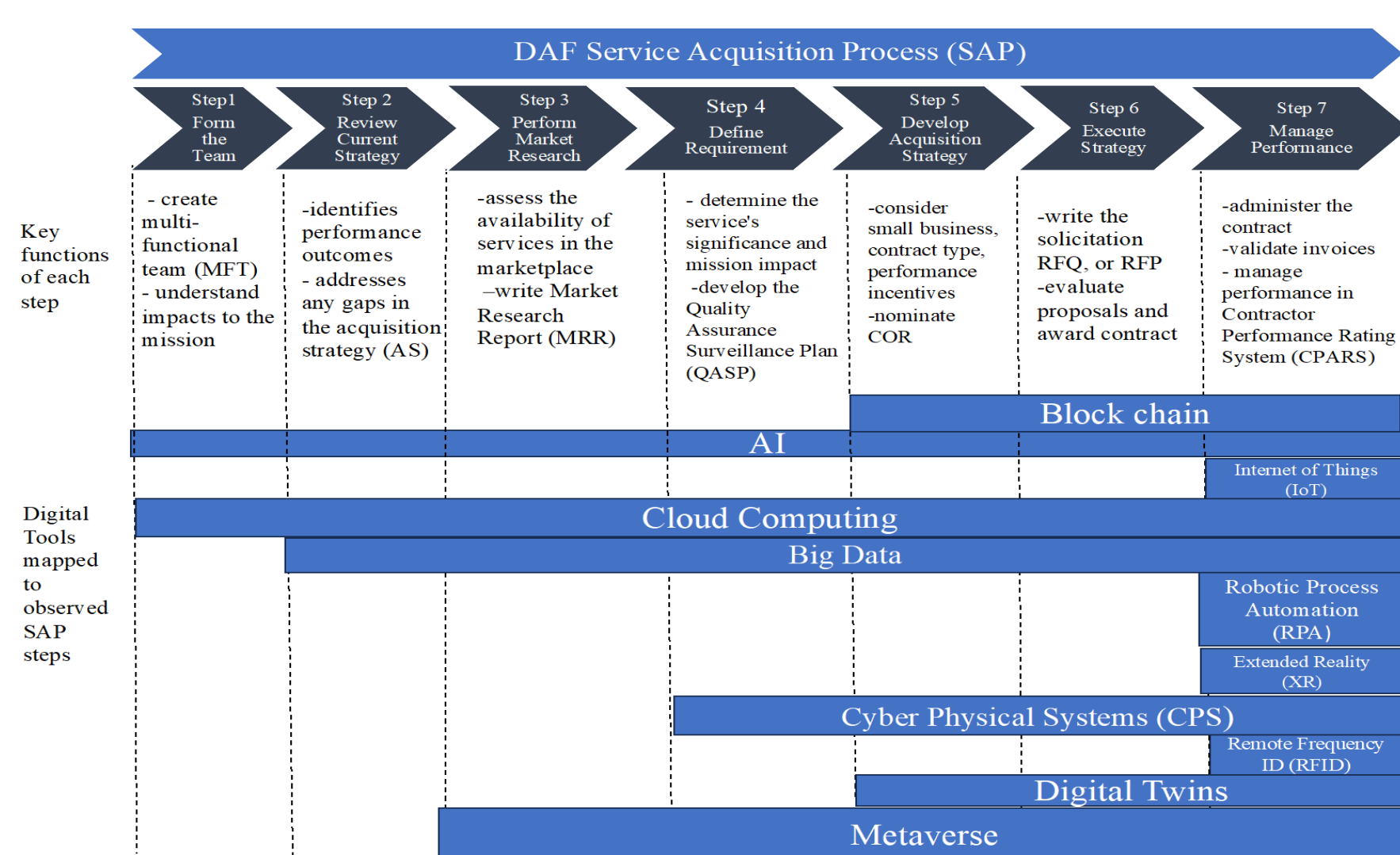


Figure 1. Matrix of DAF Service Acquisition Process and Digital Tools. Adapted from Toukola et al., (2023).

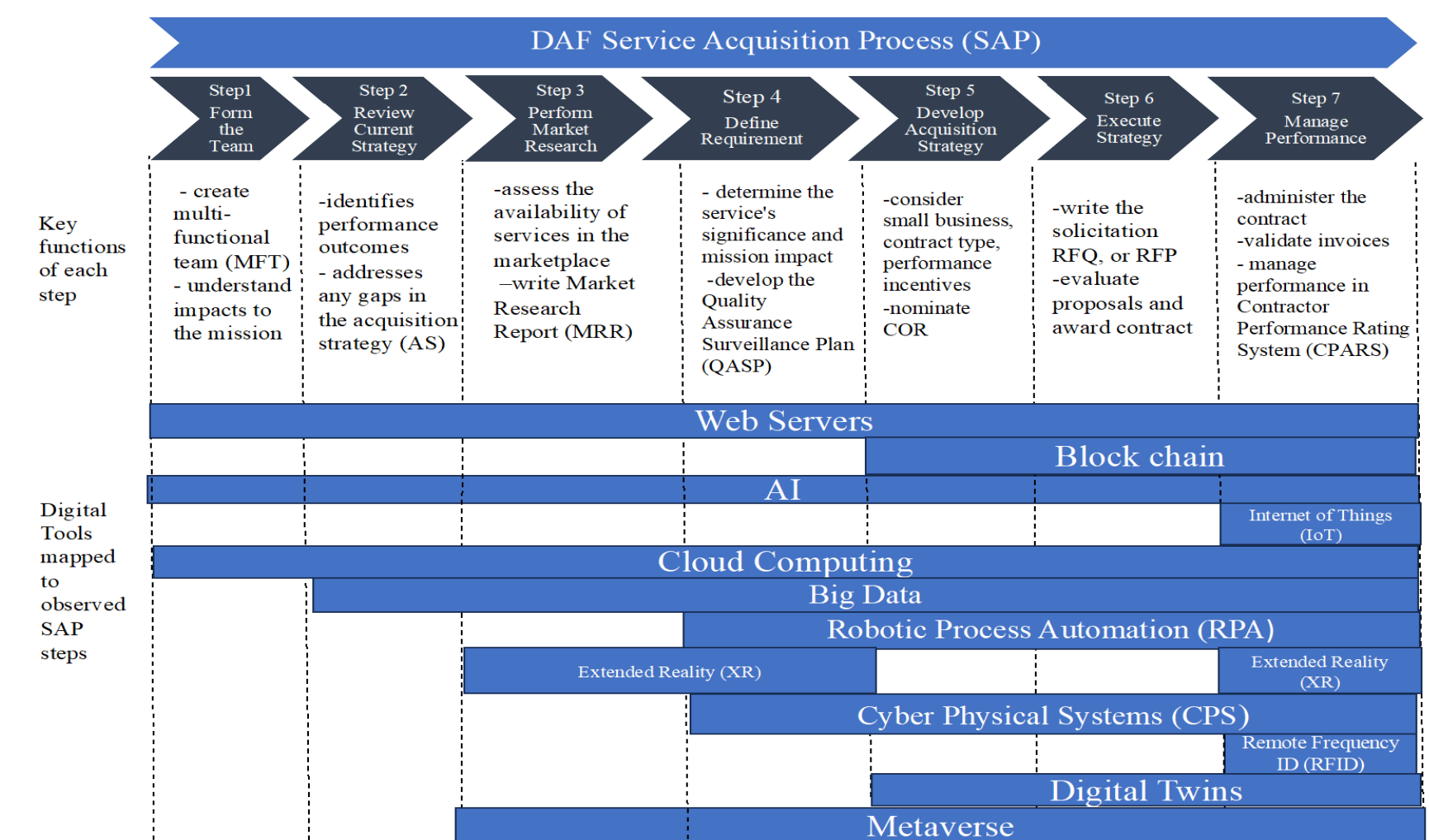


Figure 2. Final Matrix of DAF Service Acquisition Process and Digital Tools. Adapted from Toukola et al., (2023).

- The interviewees were shown the matrix (see Figure 1) and asked for their suggested changes to the matrix to accurately reflect the perspective of DAF acquisition professionals. Changes were incorporated if four or more interviewees provided the same input. As a result of the interviewees' inputs, the following three ideas were incorporated into the matrix (see Figure 2).
- 1. Added web servers as a digital tool. All but one of the interviewees discussed using the web servers CON-IT and KT file share in their daily service acquisition and suggested adding it into the matrix as a digital tool.
- 2. Expanded RPA into steps four, five and six and included bots in the terminology. Eight out of the 16 interviewees were familiar with bots but had not heard them referred to as RPAs. In addition, eight interviewees suggested the use of bot technology to support the automation of contract action beginning in step four, Define the Requirement, and continuing until step seven, Manage Performance.
- 3. Integrated XR into steps three and four. Four of the interviewees stated that XR would be a useful part of industry days. Digital end users 6 and 7 noted that XR can help explain the application of a service, such as a prototype contract to apply a visual representation to the piece of technology that is being developed. This provides a baseline for the design features of the prototype and essential elements of the mission requirement.
- The interviewees had limited familiarity with the digital tools discussed solely in the systematic literature review: blockchain, AI, IoT, Big Data, XR, CPS, RFID, digital twins, and metaverse. The DAF can utilize these findings as a basis for evaluating their needs and goals then strategically select and implement the most suitable digital tools to support and advance the service acquisition process.

Recommendations

- Allocate funding towards technical upgrades aimed at addressing interoperability gaps
- Implement mandatory digital skill training across various acquisition roles
- Ensure new digital tools developed through avenues like SBIRS are built within an approved cloud environment such as Amazon Web Services or Azure.
- Institute formal data governance and management protocols on enterprise-wide scale to improve data quality