

## Digital twins report: Background

3.1. The Ante-Mortem (AM) and Post-Mortem (PM) inspection protocols for meat quality and safety assurance in UK abattoirs are set out in the operational guidelines of the Food Standards Agency's (FSA) manual for official controls. These official guidelines outline the processes, resources, and reporting protocols used by Official Veterinarians (OVs) and Meat Health Inspectors (MHI) to carry out and file both AM and PM inspection reports.

3.2. However, findings from the "Review of 21st Century Abattoirs" showed that it is currently very challenging for the FSA and FBOs to empirically monitor the resource constraints KPIs of AM and PM inspections due to the variations in production throughputs, species processed, and kill-speeds in abattoirs across the UK.

3.3. To enable FSA inspectors and FBOs to discharge their duties efficiently and accurately, it is imperative to develop deeper insight into the process functionalities and relevant metrics that directly impact inspection efficiency, quality and safety scrutiny within abattoirs.

3.4. With the prevalence of manual inspection processes and the complexity of the inter-agency landscape involved in the delivery of official controls, there is an imminent need to improve the current human-machine or socio-technical systems that underpin AM and PM inspections.

3.5. There is scope to augment existing inspections with imaging technologies, line-mounted and hand-held sensor technologies, Artificial Intelligence (AI)-based fault detection and diagnostic technologies and track-and-trace applications. However, a crucial first step is to carry out a detailed mapping of the current or 'as-is' inspection operating model to identify areas where technology interventions would have the most valuable impact in enabling a balanced and effective socio-technical inspection system.