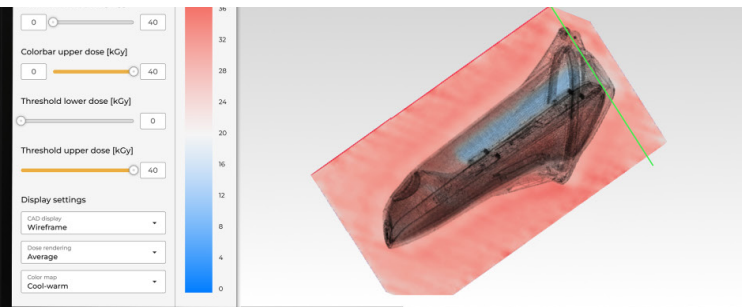


Design for Sterilization (DFS)



Client

Dose Insight

Practice Areas

Smart Medical Devices

Core Disciplines

Software Engineering

AI & Advanced Algorithms

Photonics & Imaging

Applied Physics

Challenge

Medical device sterilization validation is typically addressed late in development – after devices are fully designed and manufactured. At that stage, sterilization issues can trigger costly redesigns and significant delays. Dose Insight sought to determine whether advanced computer modeling could shift sterilization planning upstream, requiring simulation tools powerful enough for complex radiation modeling yet intuitive enough for non-expert engineering teams to use effectively.

Solution

Triple Ring developed a simulation-driven platform integrating advanced Monte Carlo radiation modeling with user-friendly software workflows and scalable cloud infrastructure. The system enables engineers to simulate radiation sterilization scenarios directly from CAD models, evaluate dose distribution across complex device geometries, and refine designs iteratively – before committing to costly manufacturing steps. Proprietary virtual dose mapping capabilities were developed to support precise, validated sterilization analysis throughout the design cycle.

Client Impact

- Enabled sterilization strategy development at the earliest stages of product design, significantly shortening development cycles
- Delivered precise radiation dose mapping for complex medical device geometries without physical prototyping
- Reduced development costs by minimizing reliance on expensive late-stage empirical testing
- Established a validated, scalable approach to integrating sterilization planning into standard engineering workflows

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