

SOMA® designed



Stryker Orthopaedic Modeling and Analytics (SOMA)

Implants Before SOMA

- ▶ Before SOMA, implants were designed using bones from cadavers, limited 2D X-ray images, and subjective design input.¹
- ▶ Minimal 3-dimensional data limited the engineers' ability to extrapolate their data to the whole population.²
- ▶ Achieving true morphological fit in Orthopaedic prostheses has been an elusive industry goal.³

Designing with SOMA

- ▶ SOMA consists of a database of over 19,500 3D bones generated from CT scans of patients. This comprehensive database and proprietary software helps design a better fitting implant and allows for true evidence based design.¹
- ▶ The 3D computer-aided design modeling continuously provides virtual feedback and prevents testing of nonconforming prototypes thereby enabling a more efficient product development process.²
- ▶ SOMA was first used to design T2 GTN in 2008, and since then has contributed to over 20 innovative Stryker products.

Innovative and differentiated

Understanding the technology

- ▶ The proprietary software to evaluate bone morphology and anatomical fit consists of three components
 - **The Bone database management tool (BODAMAT)** selects a target population based on specifics entered (i.e. age, gender, ethnicity, etc.)²
 - **Stryker Anatomy Analysis Tool (SAAT)** allows for quantitative analyzation of shape variation of bones and aids in identifying geometric measurements critical for design.²
 - **Stryker Implant Fitting Tool (SIFT)** performs an analysis of how well an implant fits on the bones in the SOMA database and enables comparison of our plate fit to competitive plates.²

Why fit matters

- ▶ A well-fitting plate may reduce the need for bending during the procedure which is important for preserving locking technology.²
- ▶ Reduced need for intra operative plate bending may allow for improved OR efficiency.²
- ▶ A well-fitting plate may result in reduction of soft tissue impingement and might decrease the risk of skin irritations.²
- ▶ A well-fitting plate can help with fracture alignment.²

PRO System



VariAx Clavicle

Locking Plate System



AxSOS 3 Titanium

Locking Plate System



Reasons to believe

- ▶ SOMA's proprietary software enables evidenced based design and the ability to verify fit.^{2,4}
- ▶ Recent plates designed using SOMA include VariAx Clavicle, PRO pelvis plates, and AxSOS 3 distal anterolateral tibia, proximal medial tibia, and the distal medial tibia plates.
- ▶ Enhanced anatomical fit in SOMA designed plates has been validated by feedback from our customers.⁵
- ▶ Stryker continues to innovate using SOMA. Several new tools, such as bone density analysis, are currently being developed to aid in future implant designs.³

“Using an underlying database with accompanying computation tools such as **SOMA** can be a powerful and efficient approach towards the development and advancement of osteosynthesis plates in trauma surgery, ultimately resulting in plates with high levels of **anatomic compliance** and **potential clinical benefits**.”²

References

1. Medical Education External SOMA Presentation, SOMA-EM-9_18207
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3. Stryker Orthopaedics and Analytics (SOMA): A Review, SOMA-AR-2,01-2018
4. Competitive Fitting Study for Locking Proximal lateral Humerus Plates, AxSOS-WP-6 Rev 1
5. SOMA-EM-4, 12-2016

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