Hip Joint Implant Design Improvement
Feasible, Optimised Complex Surface features through CAE & Additive Manufacturing

BACKGROUND AND CHALLENGE
The life and success of uncemented hip joint stem implants were highly dependent on osseointegration with femur bone. The osseointegration was in turn reliant on the geometry/surface of uncemented implant.

SCOPE OF WORK
- CAD support for design improvement
- Optimize hip joint stem
- Maximize osseointegration
- Use CAE simulation and additive manufacturing

SOLUTION
- Ensured design improvement by providing geometrical features that facilitated osseointegration
- Identified the most suitable design proposal through comparison of predictions by structural/durability CAE analysis of multiple design proposals
- Achieved weight reduction without losing the advantage of complex surface geometry for osseointegration
- Used the best design approach for Additive Manufacturing
- Devised a future-facing manufacturing process that catered to upcoming changes in design
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IMPACT
• Expedited the design and manufacturing process
• Helped the customer provide the most effective and customized implants