



Software will drive differentiation amongst machine tool vendors and enable increased adoption of new machining systems in the industry

Geometric's Expertise

Machining

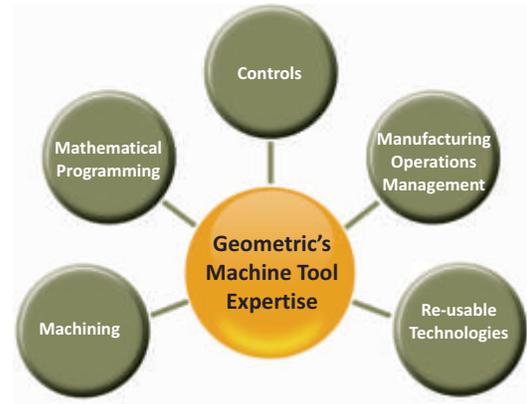
- CAM (Sheet metal, 2 / 2.5/3 axis, wire EDM , turning , mill turn)
- Collision detection and prevention
- NC programming
- Feature based machining
- Machine code generation
- Machine Simulation
- Documentation

Mathematical Programming

- Basic geometry and topology
- 3D Kernels - ACIS, Parasolid , CAA
- 3D modelers – SolidWorks, Solid Edge, Inventor, CATIA V4, CATIA V5, UG-NX, Pro /E
- Algorithm design and programming
- 3D visualization

Software Engineering for Machine Tool Systems

Machine tools industry has evolved significantly over the years, with developments in both hardware technologies and related software applications. Machines have become faster, more intelligent and versatile with individual machines moving from being single purpose to multi-functional, capable of executing wide range of tasks within a single setup. The adoption of CAD-CAM integration technologies has enabled increased accuracy and brought in automation in the machining process.



Going ahead, as the developments in software applications are poised to outpace developments in hardware performance; machine tool OEMs are turning to software solutions to gain a competitive advantage. Also, with manufacturing turning increasingly global, there is a need to integrate and standardize platforms and systems to bring in operational efficiencies.

Software can enable advanced features in machining systems like higher precision machining to handle growing miniaturization, ability to handle different materials that include glass and ceramics and for niche segments like medical devices. Software can also bring in differentiation through programming productivity, ease-of-use, and a future ready sustainable product architecture that draws on the latest advances in information and communications technology.

Trends in Software for the Machine Tool Industry

- Increased emphasis on reliability and speed through software controls
- Standardization of multiple software products to a single scalable platform
- Advanced CAM technology for multi-axis, multi-spindle and multi-turret machines
- Automation of the manufacturing engineering process
- Development of total manufacturing solutions rather than simply supplying equipment alone
- Standardization and interoperability with CAD platforms
- Simulation of all aspects of complex machines and validation of programs before execution
- Direct integration with enterprise PLM, MES, process planning and ERP systems to provide an integrated view for operations

Experience with the evolving technology in the machine tools industry has helped us understand the software challenges faced by this industry and partner with customers to deliver competitive advantages through our services in software engineering



Manufacturing Operations Management

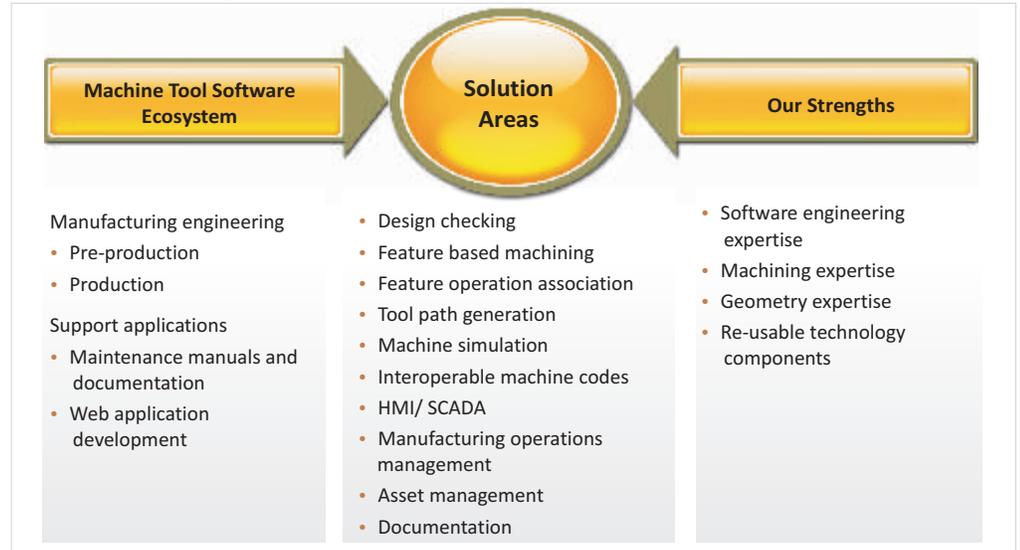
- Machine analytics
- Production recording
- Machine overall equipment effectiveness (OEE)
- Integration with MES solutions

Controls

- Design & development of control applications
- Web based application development
- Engineering design documentation
- SCADA / HMI
- Integration with shop floor applications (M to M, ERP)
- Embedded systems development

We help machine tool OEMs meet their increasing demands for sophistication in geometry and design data handling, simulation, tool path generation, production management and documentation

Service Offerings and Solutions



Geometric's services enable machine tool OEMs to introduce advanced capabilities through software solutions that complement their hardware systems. Geometric offers full lifecycle services starting from the concept through development to technical support and maintenance of the software. We deliver value on existing software applications through our re-platforming services like porting applications to 64 bit environments, migrating to the latest GUI technologies, standardization of multiple software products to a single scalable platform, as well as ensuring interoperability with leading CAD, CAM and quality management applications.

Geometric's software product engineering expertise backed by our tools & processes ensures delivery excellence with benefits like:

- Improved and consistent quality
- Upto 15% reduction in cost over offshore baselines
- Upto 20% reduction in time to market

Geometric's Re-usable Technologies for Machine Tools

Geometric has a set of re-usable technology components that can be leveraged to meet the software challenges faced by machine tool OEMs and reduce the software development lifecycle time.

Multi-Surface Machining Library	CAMWorks®	NestLib®	Automated Feature Recognition	eDrawings® Publishers
Tool path generation for 3-axis CNC milling	SolidWorks based CAM application	Automatic nesting for optimal material utilization	For extracting features and parameters from solid models	3D viewer capabilities within the technical manual

Contact Us

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Geometric

About Geometric

Geometric is a specialist in the domain of engineering solutions, services and technologies. Its portfolio of offerings enables companies to formulate, implement, and execute global engineering and manufacturing strategies aimed at achieving greater efficiencies in the product realization lifecycle. Headquartered in Mumbai, India, Geometric was incorporated in 1994 and recorded consolidated revenues of Rupees 4.86 billion (US Dollars 121.6 million) for the year ended March 2008. It employs close to 3000 people across 10 global delivery locations in the US, France, Romania, India, and China. Geometric is assessed at SEI CMMI Level 5 for its software services and ISO 9001:2000 certified for engineering operations. For further details, please visit www.geometricglobal.com.

For further details about Geometric's Machine Tool Solutions, please visit <http://www.geometricglobal.com/Industries/Machine+Tool/index.aspx>