PTC Acquires NC Graphics
High-Speed Precision Machining Solution Broadens Pro/ENGINEER® CAM Offerings
May 2007
PTC Acquires NC Graphics

Transaction Overview and Strategic Fit
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Acquisition Details

PTC acquired NC Graphics, the technology leader in the high-speed machining market

- NC Graphics serves customers in key discrete manufacturing segments
  - Aerospace & Defense
  - Automotive
  - Electronics & High Tech
  - Industrial Equipment
  - Medical Devices
- Market reach is also extended through leading OEM partners
- Developer of market leading high-speed machining technology for toolmaking, prototypes and other precision machining applications
- NC Graphics solutions deliver machining toolpaths produced from existing 3D CAD data that are accurate, relevant, and precisely tailored to the needs of toolmakers
- NC Graphics is privately held, headquartered in Cambridge, UK, with 15 employees

With this acquisition, PTC is uniquely positioned to help customers optimize both the design and machining of molds, dies, prototypes and other high-speed precision applications
NC Graphics Fits PTC’s Acquisition Strategy

Financial Fit
- Should accelerate PTC growth longer-term: CAM market leaders are growing over 20% y-o-y (source: CIMDATA 2006)
- Fairly valued

Strategic Fit
- Adds value for PTC:
  - Strengthens PTC’s Pro/ENGINEER CAM Solutions: enables discrete manufacturing customers to create high-speed precision machining toolpaths from any 3D CAD data including Pro/ENGINEER, UGS (Parasolid) and CATIA
  - Allows PTC to offer a best-in-class stand-alone solution
  - Enables the creation of associative machining toolpaths from Pro/ENGINEER 3D CAD data
- Adds value for NC Graphics:
  - NC Graphics customers can benefit from the tight integration with PTC solutions, driving process efficiencies previously unattainable
  - Leverages PTC’s global development, marketing, sales, distribution and services channels to enhance NC Graphics sales and increase customer support
The NC Graphics Acquisition Furthers PTC’s Renewed Focus on CAM

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The acquisition of NC Graphics further strengthens PTC’s renewed focus on Computer-Aided Manufacturing (CAM) by integrating advanced capabilities in tooling and factory equipment design, enhancing the company's offerings in manufacturing process management and tooling design.
NC Graphics Technology Extends PTC’s CAM Offerings
Toolmaking is Important to Discrete Manufacturers

Toolmakers create fixtures and equipment used to manufacture products

- Design and produce molds, dies, and other tools for manufacturing processes
- Quality of the end product depends on the quality of the tooling
- High-speed machining is often used to produce molds, dies, and prototypes

Tooling is created from CAD design data

Tooling design and manufacture is often outsourced to specialized shops

- Supporting multiple CAD systems is important for servicing different clients
- Speed and ease of use are critical to process large influx of new designs
Elements of Tool Design Using a Mold Example

- Part design
- Mold base creation
- Core/cavity creation
- Plastic flow simulation
- Mold detailing
- Mold machining
Market Trends

Trends in Manufacturing
- Global competition
- Technology advances
  - Design, mold and machining simulation
  - Concurrent engineering
  - Multi-axis machining (5-axis)
  - High-speed machining

Market Drivers for Optimizing Machining Processes
- Time-to-market pressures
  - New products
  - Response to design changes
- Decrease cost by improving operational efficiency
  - Shorter cycle time and smaller production runs
  - Improve asset utilization to optimize productivity and throughput
- Improve quality
- Collaboration (globalization)
Toolmaking: Today’s Process Is Inefficient

Current Process Challenges

- Creating machining toolpaths faster
- Increasing complexity of shapes and parts
- Creating precise toolpaths to deliver high quality surface finish to avoid manual polishing
- Creating efficient toolpaths to decrease manufacturing time and wear on equipment
- Ease of use current CAM software
- Supporting designs created in different CAD systems
- Managing tooling design and NC program data

A Better Process

- Leverages best-in-class tool design and machining applications
  - Easy to learn and use
  - Automates tedious, repetitive tasks
  - Quickly computes the machining toolpath with little operator interaction
  - Supports multiple CAD systems
- Provides designers, toolmakers, and manufacturers secure, centralized access to tool design and machining data
Comparison of Machining Type and Toolpath Characteristics

- PTC capabilities prior to acquisition
- New capabilities

Geometry Complexity

Toolpath Programming

Mold / Die / Precision Surface Machining

Prototypes

Production Machining
NC Graphics is the Leader in High-Speed Machining Technology

Founded in 1977

Industry Leadership

- NC Graphics provides best-in-class special-purpose high-speed precision machining software
- NC Graphics technology is licensed to 5 of top 10 CAM vendors- including CNC Software, makers of Mastercam

Solid, global customer base representing discrete manufacturers and specialized tooling companies serving industries such as

- Aerospace & Defense, Automotive, Electronics & High Tech, Industrial Equipment, and Medical Devices

Strong VAR channel and OEM relationships in key markets

- Japan, Germany, Pacific Rim
30 years of Customer Success – NC Graphics Core Verticals

- Aerospace/Defense
- Automotive Products
- High Tech/Electronics
- Industrial Products
- Medical Products

- Avalon Plastics Ltd
- Ford
- ADRECO LTD
- DAEIL MOLDS
- INVICTA

- C² Composites
- SUZUKI
- FUJITSU
- NPE innotek
- MICRO MATIC

- DIECAM
- TOYOTA
- 'model patterns'
- KEIRON MOULD TOOLS ltd
- L.P.S ENGINEERING

- GALTEC
- INTIER
- schefenacker
- Toshiba
- Modern Moulds & Tools Ltd

- TRITEC
- racing technologies
- TOSHIBA
- Playden Tools Ltd
- PLAYDEN TOOLS LTD
toolmakers

- INCA Tooling Ltd
- Racing Technologies
- TWM Die Tools
- SHARP INTERPACK
- Modern Moulds & Tools Ltd

- smpp
- the Di-Spark Group
- W.G Tooling
- SORVIRON PLASTICS
- SYMMETRY Medical™

- Aerospace/Defense
- Automotive Products
- High Tech/Electronics
- Industrial Products
- Medical Products

- The Royal Orthopedic Hospital
- Stanmore Implants
NC Graphics - Product Overview

NC Graphics leverages the latest cutting tool and CNC machine technologies

- First launched in 1997
- Developed in collaboration with DEPO Machine, a leading German manufacturer of high speed milling machines
- Based on more than 30 years of CAM experience

NC Graphics’ solution is a stand-alone application

- Windows-based
- Easy to use
  - Shop floor oriented
  - One-day training

Fast and reliable
NC Graphics Helps PTC Solve Today’s Challenges And Tomorrow’s

Increasing Part Complexity

Today

3 + 2 Axis Machining

Time

5-Axis Machining

Future

Total
On the Horizon: 5-axis High-Speed Machining Technology

- 5-axis technology
  - Very fast, new technology
  - Focus on automation for toolmaker
  - Knowledge of remaining material
  - Automatic 5-axis machining: converts 3-axis toolpaths to 5-axis

- 64-bit support
  - Improves handling of large models and addresses memory limits

- GRANITE integration
  - Provides associativity to Pro/ENGINEER CAD designs

- PDS integration
  - Windchill®

- New PTC product branding
  - Pro/TOOLMAKER™
PTC is Uniquely Positioned to Optimize Toolmaking Processes

- Traditional toolmaking processes are inefficient
- NC Graphics’ solutions revolutionize the way companies create and deliver high-speed precision machining toolpaths
- NC Graphics is complementary to our existing solutions and extends the value of Pro/ENGINEER CAM software and service offerings
- PTC extends the value of NC Graphics solutions and is committed to offering a stand-alone solution
- PTC’s strategy is to remain open and work with a variety of CAD systems
- Combining NC Graphics’ mastery of high-speed precision machining with PTC’s expertise in 3D design and associative content will provide a powerful, solution for toolmaking
Q&A