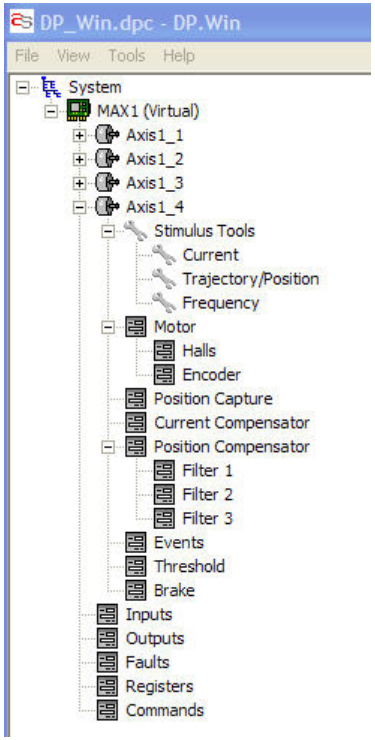
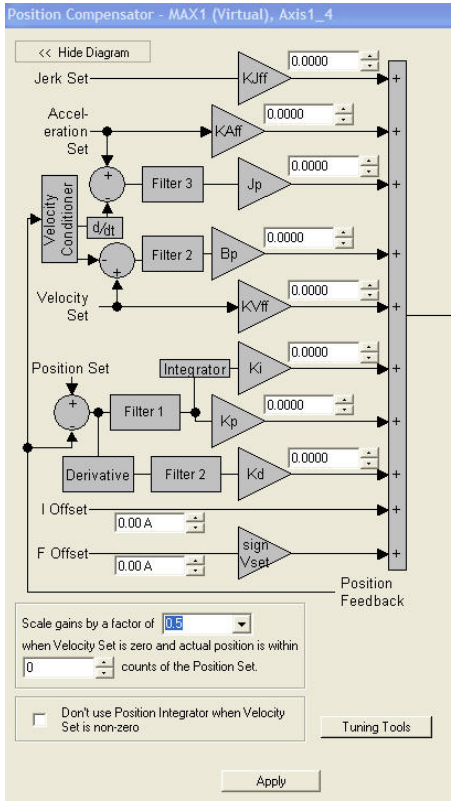
Technology Overview

September 2007

Agenda

1. Agile System Technologies Introduction
2. Agile Systems Introduction
3. Presentation
   - Overview
   - Products
   - Applications





Overview

- Established 1994
- 26k sq.ft. facility
- Design, manufacture energy efficient motor controls
- ISO certified


QMI
Certificate of Registration
AGILE SYSTEMS INC.
575 Kumpf Drive
Waterloo, Ontario
N2V 1K3 Canada
ISO 9001:2000
Agile Systems Inc. custom Designs and Manufactures compact package integrated digital power modules for the OEM Equipment and Motor Control Markets.

Manufacturing

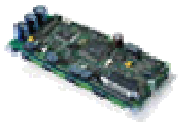
- In-house manufacturing
- SMT line
- Prototype capability
  - Quick turn-around
- Repair capability

Technology

Promised Innovation

96
stom Controller
st distributed controller

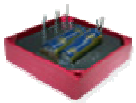
1998
MAX2000™
First standard distributed controller



2001
MAX3000™
High density – advanced Multi-axis controller and amplifier

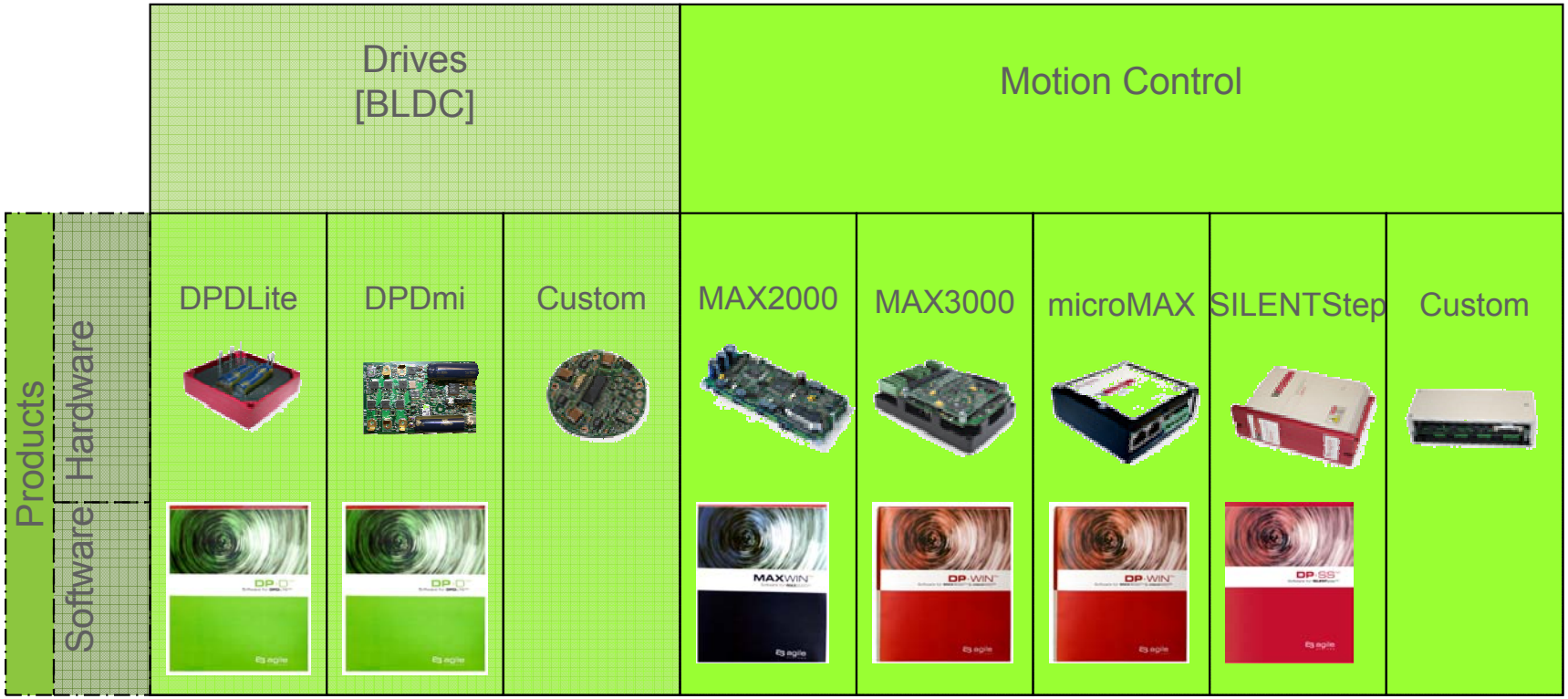
2003
microMAX™
First high density single Axis controller on Firewire

2004
DPDLite™
Patented energy Efficient robust motor controller



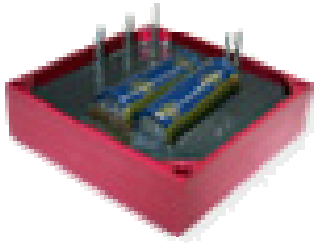
2005
SILENTStep™
Patented energy efficient ‘silent’ stepper drive

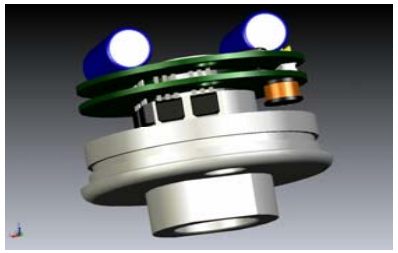
Product Families



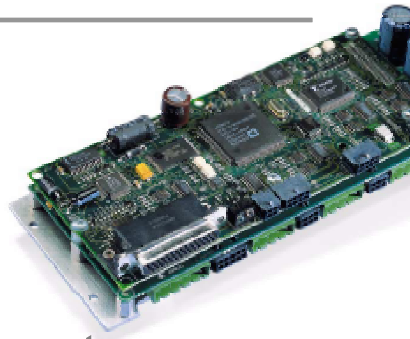
DPDLite

- Patented technology
- Velocity control
- robust start-up
- increased reliability
- compact
- energy efficient
- Six step back-EMF commutation
- Input Voltage: 12 – 30 VDC
- Peak Current: 30 Amp
- PWM output: 20 kHz





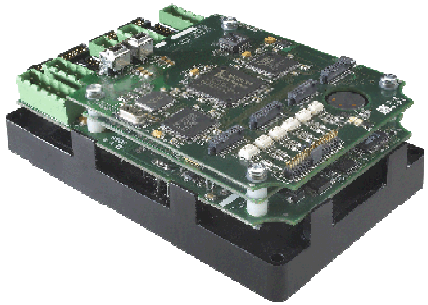
Max 2000



- S-curve and trapezoidal profiles
- PID with velocity, acceleration & jerk feed-forward
- 4kHz position, 20kHz current loop
- Support for all types of brushed and brushless servo motors
- 3 high-current brake outputs
- Communication via RS-232 or high speed RS-485
- Small form factor

Max 3000

- 4 axis of high performance DSP based motion control and amplifier
- DigitalPOWER™ Block [DPB] technology
- Firewire, RS-232, RS-485 and RS-422
- Sinusoidal commutation
- S-curve and trapezoidal profiles
- PVT: position, velocity, time set-points
- Supports: DC brushed, AC/DC
- brushless with quadrature encoders
- Step/Micro step for steppers
- Support for sin/cos encoders and
- additional opto I/O via daughter card
- Multiple IIR 3rd order filters
- Stand-alone mode



microMAX R

Single axis of high performance DSP based control

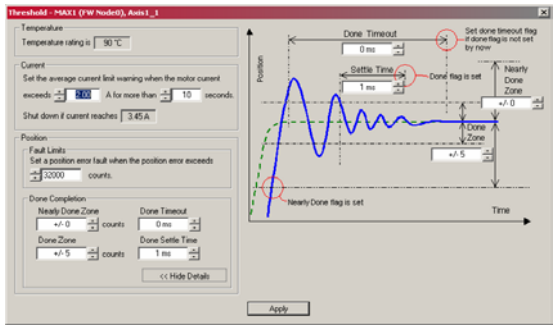
- Isolated Network Architecture
- Two variants
  - microMAXR^{bp}
  - microMAXR^{lc}
- Peer to Peer
- DigitalPOWER™ Block Technology
- Supports: FireWire®, RS232/485/422
- Sinusoidal commutation
- S-curve and trapezoidal profiles
- Performance options: PVT, PT set-point streaming
- Supports Brushed, Brushless, stepper and voice coil motors
- Supports quadrature, serial and optional sin/cos encoders

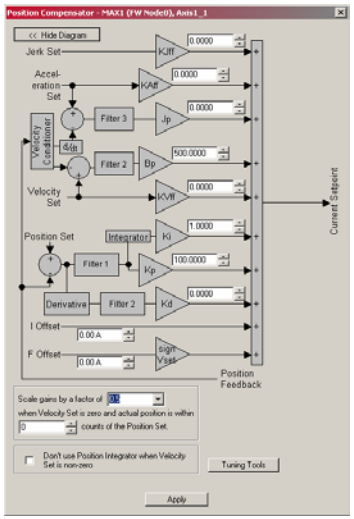
SILENTStep

- Patented technology
- Hybrid stepper drive
- Pulse and Direction input
- No feedback required
- Reduce noise, up to 75%
- Reduced vibration
- Lost step correction
- Lost step detection

Software

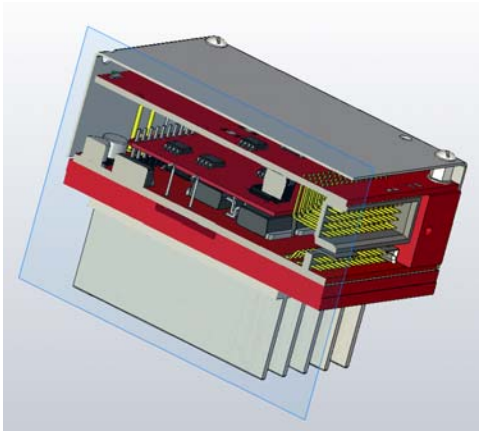
- Tightly coupled to products
- Advanced patented algorithms enable quick product development
- Advanced tools
- Code at the board level





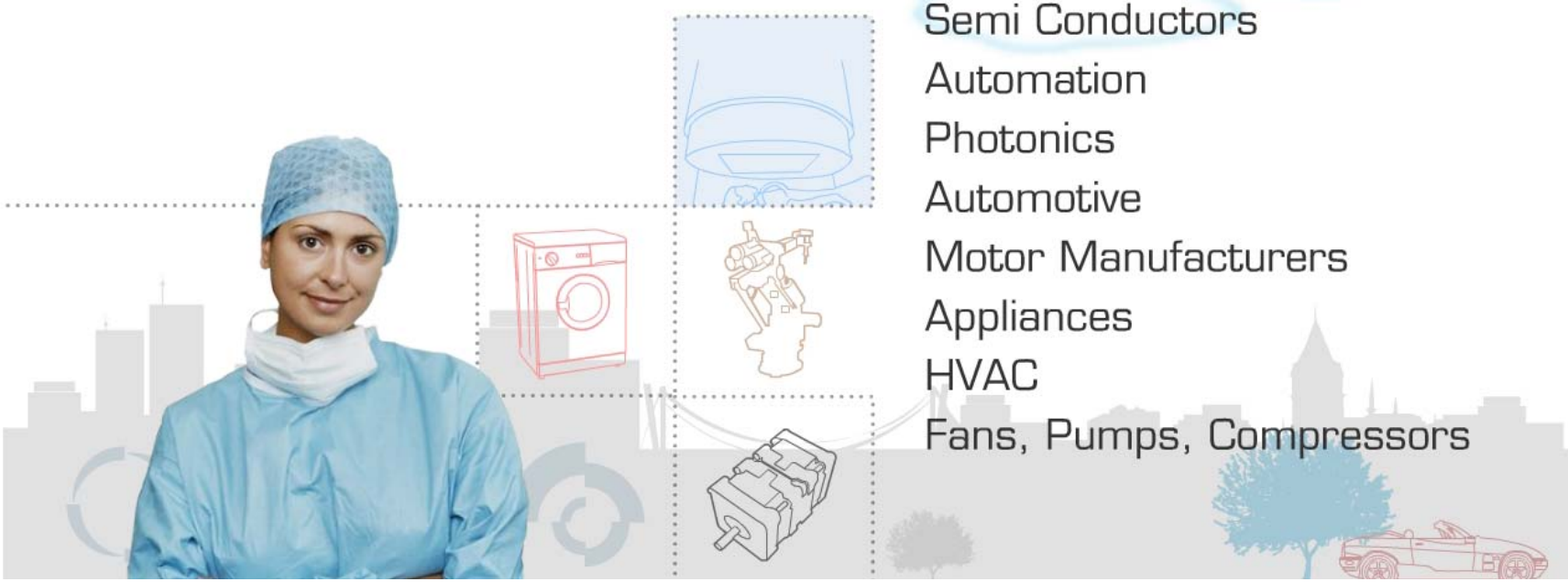
Product Roadmap – 2007

- Motion Control
  - DPB performance enhancements
  - microMAXR^{bp}
  - microMAXR^{lc}
  - Peer to peer
  - SILENTStep higher performance
  - Split M/C and Amplifier
  - Certifications – RoHS, CE



Markets

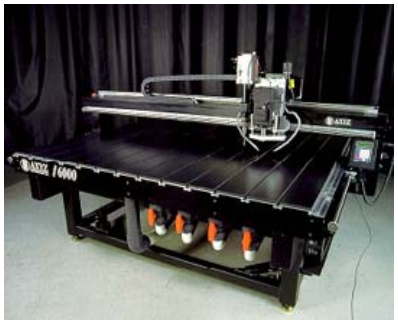
Broad Applications



- Life Science
- Semi Conductors
- Automation
- Photonics
- Automotive
- Motor Manufacturers
- Appliances
- HVAC
- Fans, Pumps, Compressors

Personalized Products

- Ability to Personalize products
- Form Factor
- on-board intelligence

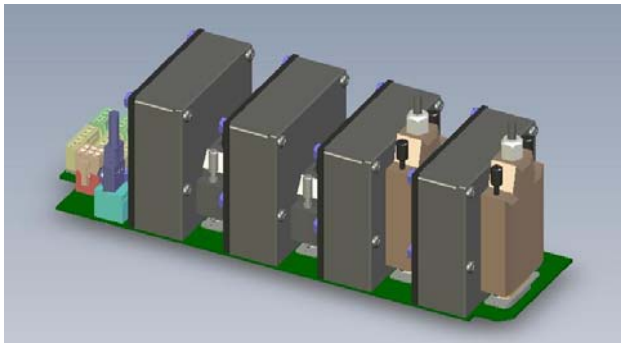


Personalized Products

- Example that saved a customer an estimated $10,000 per machine
- 3 servo axis, 1 stepper axis
- Custom I/O

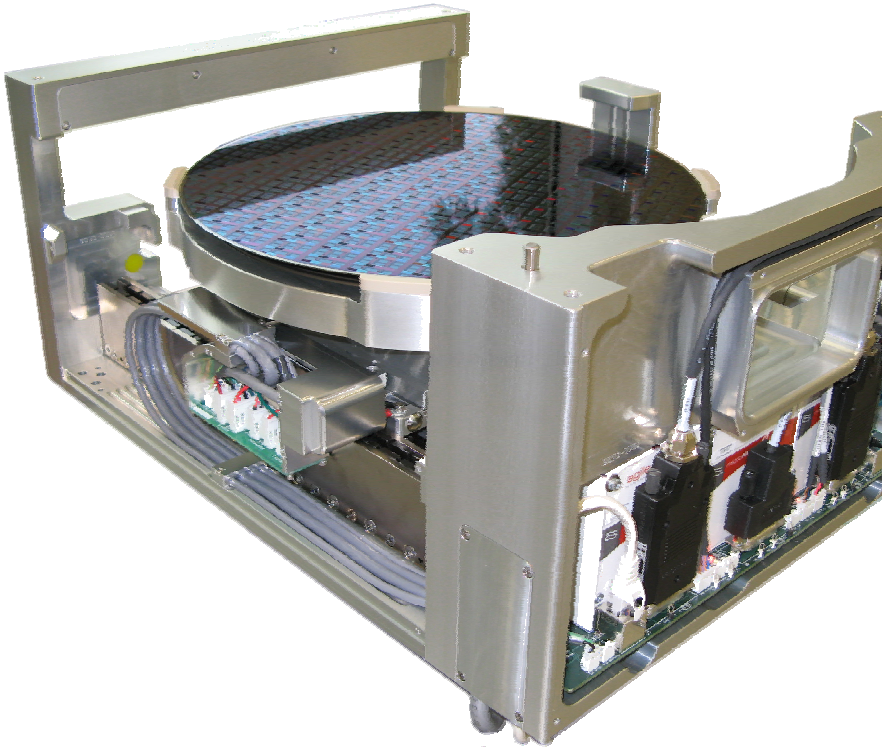
Total Integration

- built-in designs
- board level ‘component’



Application

- Nano precision 6 axis stage using microMAX R^{bp}
- +/- 3 nm repeatability
- Pre-alignment from 3 sec to .6 sec
- Second Generation
  - 4X ▲ machine performance
  - 2X ▲ reliability
  - 2X ▼ development time
  - 3X ▼ cost



Development level