VIA Eden Embedded System Platform Introduction

VIA Eden Platform Positioning

- **Lowest power, highest performance, and most scaleable x86 embedded platform for the rapidly emerging Connected Digital Information & Entertainment Device Market**
  - Market-leading embedded sixth generation x86 processor core
  - Proven, highly integrated x86 North Bridge & South Bridge options
  - Flexible Companion Chip expansion options

VIA Eden Platform Architecture
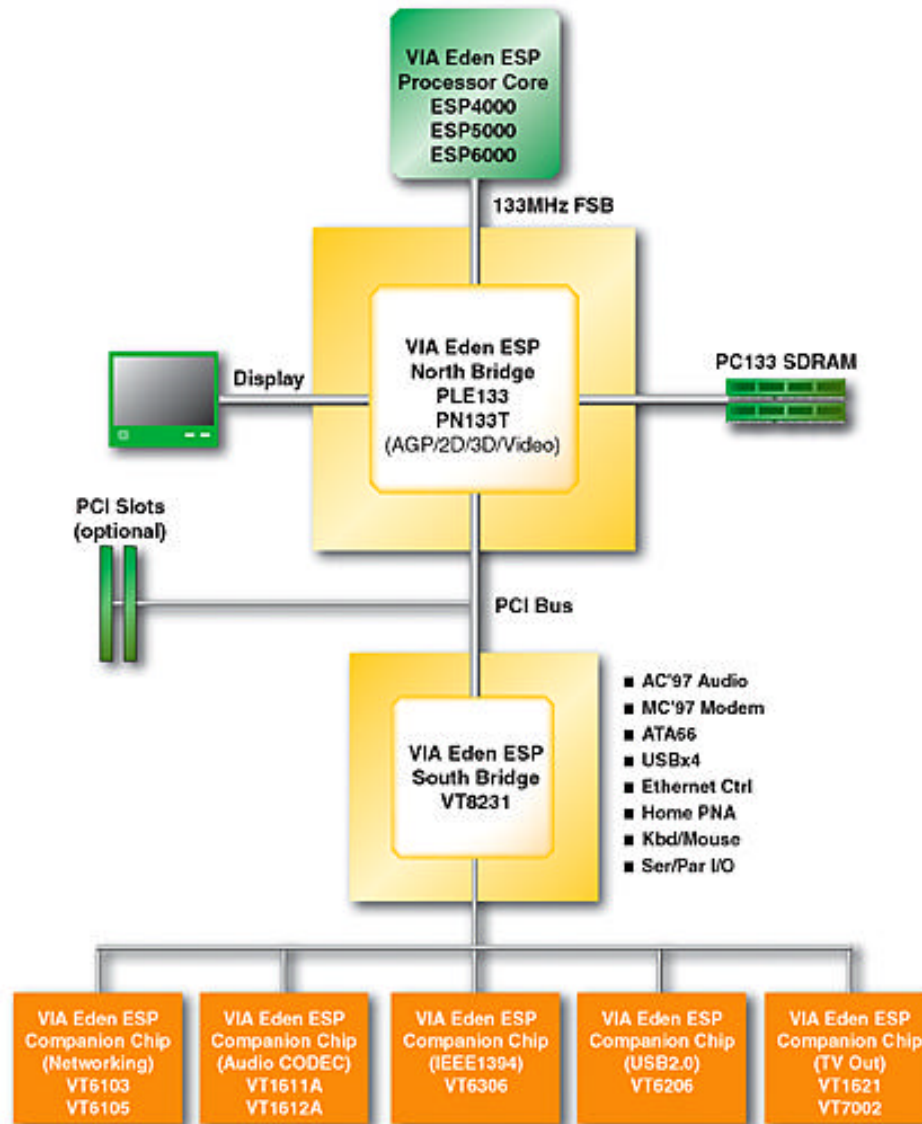
VIA Eden Platform Family

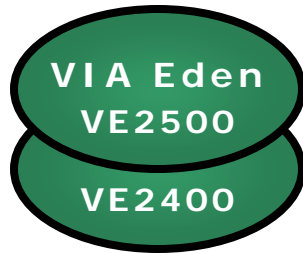| VIA Eden Platform Series	VIA Eden Platform Processor Core	VIA Eden Platform North Bridge	VIA Eden Platform South Bridge
VIA Eden VE1000 Series			
VIA Eden VE1400	ESP4000	PLE133	VT8231/VT868B
VIA Eden VE1500	ESP5000	PLE133	VT8231/VT868B
VIA Eden VE1600	ESP6000	PLE133	VT8231/VT868B
VIA Eden VE2000 Series			
VIA Eden VE2400	ESP4000	PN133T	VT8231/VT868B
VIA Eden VE2500	ESP5000	PN133T	VT8231/VT868B
VIA Eden VE2600	ESP6000	PN133T	VT8231/VT868B

VIA Eden Platform Roadmap

**VIA Eden
Server Platform**

**VIA Eden
VE3x00**

• Lowest power/thermal for dense severs

**VIA Eden
Multimedia
Platform**

**VIA Eden
VE2500**

VE2400

**VIA Eden
VE2600**

• LVDS/DSTN support

• Integrated AGP4X graphics &
motion compensation

**VIA Eden
VE4x00**

• Enhanced MPEG2/MPEG4 features

• DDR support

**VIA Eden
Entry Level
Platform**

**VIA Eden
VE1500**

VE1400
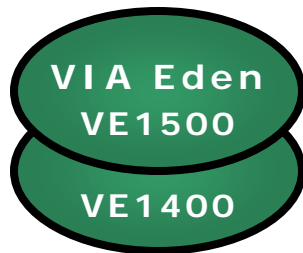
**VIA Eden
VE1600**

• Lowest power consumption

• Integrated AGP2X graphics

Q4 '01   Q1 '02   Q2 '02   Q3 '02

VIA Eden Platform VE1000 Series

VIA Eden ESP Processor Core
ESP4000
ESP5000
ESP6000

CRT Support

TFT / DSTN
Flat panel or
DVI Flat Panel
Monitor

VMI
TV Signal /
TV Encoder

DIMM Modular ID

System Memory Controller
64-bit SDRAM

VT8601A
North Bridge
510-pin BGA

PCI bus
Up to 5 PCI Slots

Expansion Cards

Sideband Signals:
Init / CPU reset
IRQ / NMI
SMI / StopClk
FERR / IGNNE
SLP# (Slot 1)

Boot ROM

Onboard
LPC I/O

Integrated AC-97
AC'97 Audio MC'97

LPC

SMB

VT8231
South bridge
376-pin BGA

Keyboard / Mouse

MIDI / Game Ports

Parallel Port

Serial Port 1 & 2

IR Com Port

IRE Primary & Sec

Floppy disk Inter.

AC97 Link

RTC Crystal

USB Port 0-3

Fast Ethernet Interface

Hardware Monitor Inputs

GPIO, Power Control, Reset
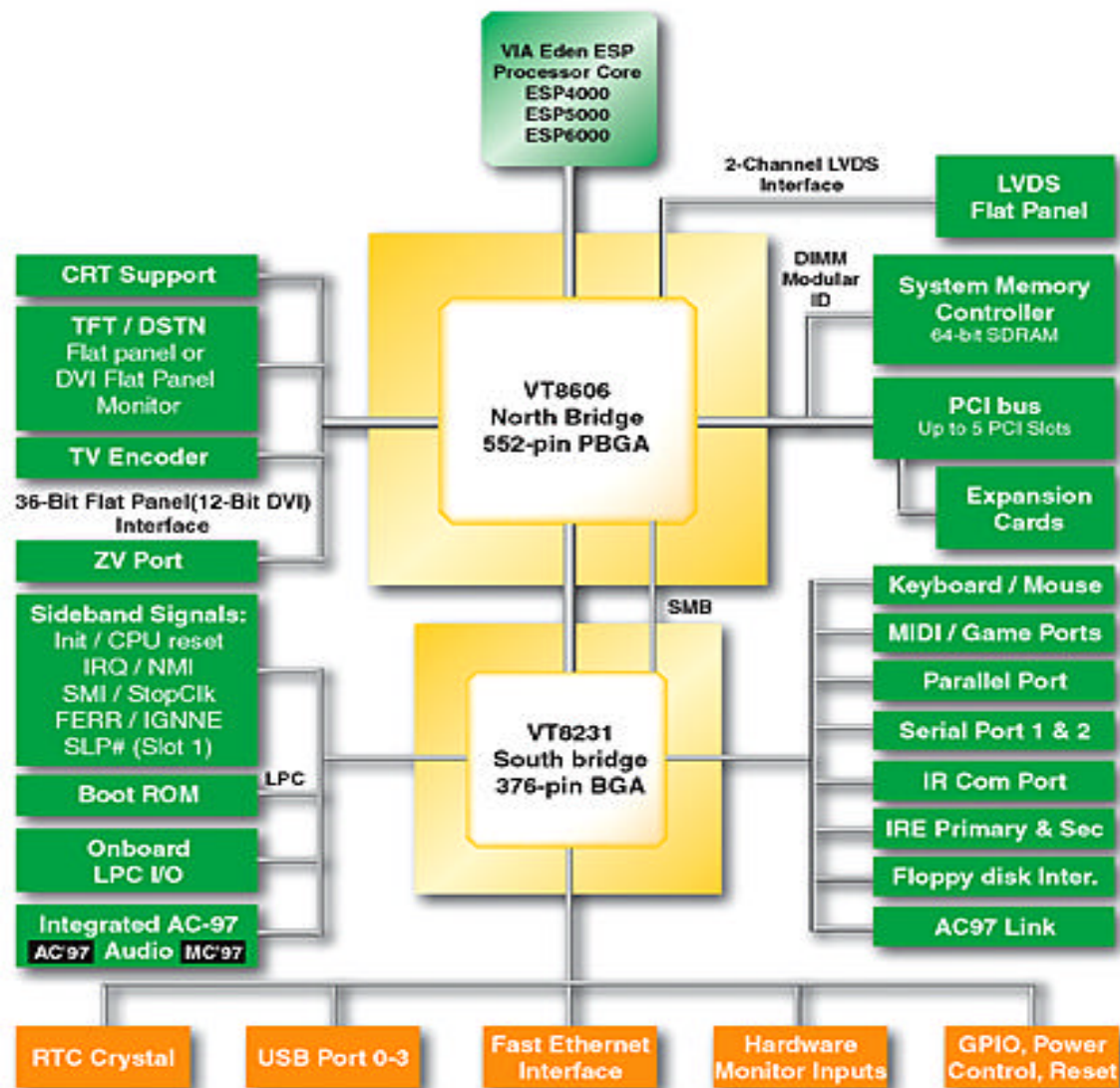
VIA Eden Platform VE2000 Series

VIA Eden Platform Companion Options

- **Richest mix of expansion options from a single vendor**
- **Most cost effective integration of additional communications, multimedia, and connectivity features**
  - **Networking**
    - VT6103 (PHY) , VT6105 (2 in 1)
  - **TV-Out**
    - VT1621 , VT7002
  - **Audio CODEC**
    - VT1611A , VT1612A
  - **IEEE 1394**
    - VT6306
  - **USB 2.0**
    - VT6202

VIA Eden Platform Design Applications

	Home Information & Entertainment Devices	Commercial Information Devices	Mobile Information Devices
VIA Eden Platform **VE2000 Series**	**Information PC Information Station**, (Set Top Box, PVR, Web Terminal, Game Console)	**Information PC Information Station** (Thin Client, LCD Web Based Terminal, LCD POS Terminal)	**Information PC** (Tablet PC, Web Pad, Sub Notebook) **Information Station** (E-Book)
VIA Eden Platform **VE1000 Series**	**Information PC Information Station (**VOD Set Top Box, Web Terminal) **Information Server** (Broadband Gateway/Router, Storage)	**Information PC Information Station** (Thin Client, Web Based Terminal, POS Terminal) **Information Server** (Router, NAS, Rack Mount Servers)	

x86 Embedded Platform Comparison

Company	VIA	NS	Transmeta	Intel
Name	Eden	GX2	TM5800	Celeron ULP+MX440
Voltage	**1.05 / 1.2 / 1.2 V**	1.2 V	1.3 V	1.1 V
Thermal Design Power	**3 / 5 / 5 W**	N/A	6.0 W	5.73 W
T case	85C	85C	85C	85C
L1 / L2 Cache	128 / 64 KB	32 / 0 KB	128 / 512 KB	64 / 128 KB
Package	EBGA, 376	EBGA, 368	BGA, 474	uBGA2, 495
Integrated Graphics	Yes	Yes	No	No
3D Instructions	Yes (3DNow!, MMX)	Yes (3DNow!, MMX)	No	Yes (MMX; SSE)
Integrated Audio	Yes	Yes	Yes	Yes
Integrated Modem	Yes	No	Yes	Yes
Integrated Network	**Yes**	No	No	No
USB Ports	Yes (4 Ports)	Yes (4 Ports)	Yes (4 Ports)	Yes
UDMA Support	**Yes (ATA 100/66/33)**	Yes (ATA 66)	Yes (ATA 100/66/33)	Yes (ATA 33)
LPC Bus Support	**Yes**	No	No	No

* Intel and Transmeta power and thermal numbers from publicly available technical documents

** Transmeta specification based on TM5800+M1535

VIA Eden Platform Advantages

- **Lowest power x86 embedded platform**
- **Highest performance x86 embedded platform**
- **Proven x86 compatibility**
- **Richest level of integration options**
- **Global support infrastructure**
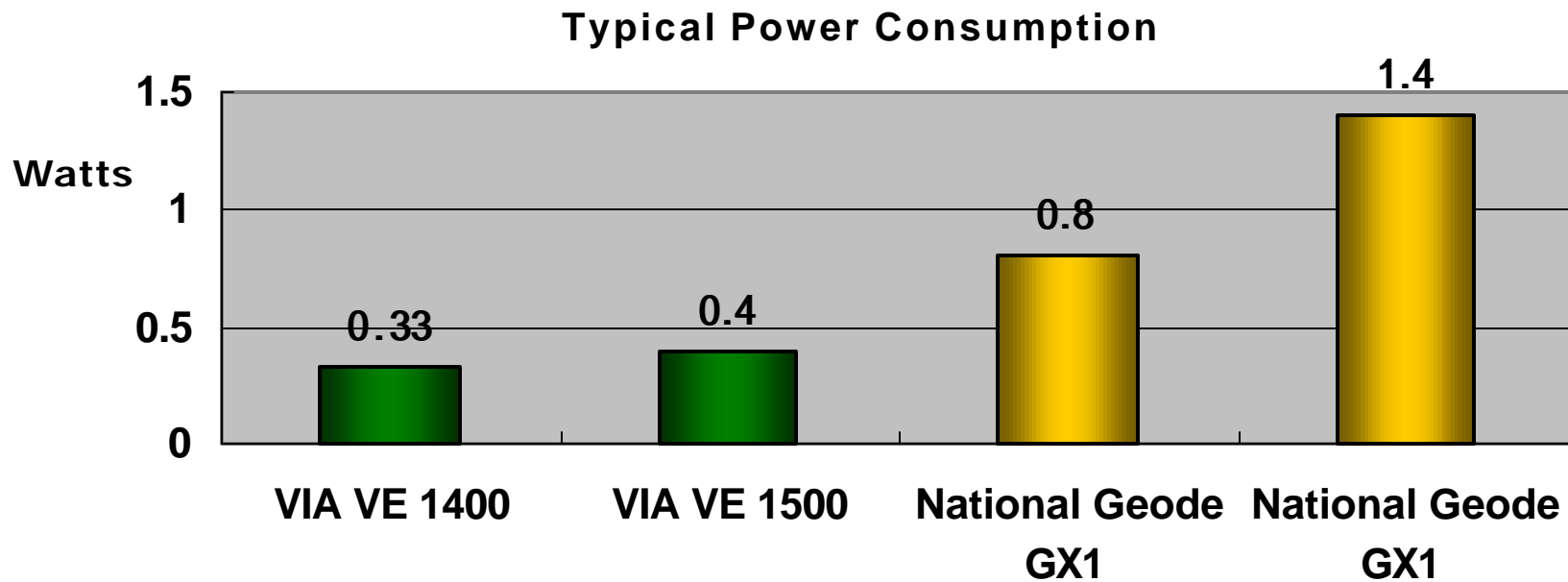
VIA Eden Platform Low Power

- **Lowest voltage processor core**

- **Lowest processor thermal design power**

- **Lowest processor power consumption**

- **Lowest overall platform power consumption**

  - Includes features such as 3D not available on competitor platforms

	VIA Eden ESP	NS GX2	Transmeta TM5800	Intel ULV + MX440 (MHz)
Voltage	1.05/1.2/1.2V	1.2V	1.3V	1.1V
Thermal Design Power	3/5/5 Watts	N/A	6.0W	5.73W

VIA Eden Platform Processor Core Power Consumption

Typical Power Consumption

	Watts
1.5	
	14
1	
	08
0.5	
	04
	033
0	

VIA VE 1400   VIA VE 1500   National Geode GX1   National Geode GX1

*Typical power defined as the average power consumption while browsing the Internet or performing data entry.

**VIA Eden 1400/1500 Platform: On Chip 2D/3D AGP VGA, 8MB Shared Memory, 1024x768x16 bit resolution; 128MB PC133 SDRAM; 13.5GB UDMA66 HDD; Windows 98 SE.

*** NS Geode GX1 Cyrix Media GX MMX-S 233MHz 64MB*1 PC-133 SDRAM CS5530A-UCE ,Award pos561/pos563 BIOS v1.10 HDD: Quantum 40G AT Fireball + AS, Windows 98 SE

Low Power Benefits

- **Enables flexible & innovative system designs**
  - Desktop & mobile devices
  - Small, low profile form factors
  - Fanless implementation for ergonomic silent designs
- **Optimizes heat dissipation & power consumption**
  - Saves energy costs
  - Ensures longer battery life in mobile designs
  - Enhances reliability, particularly for "always on" designs

Exceptional Performance

- **Highest performance x86 embedded processor core**
  - Native x86 execution
  - Integrated full-speed 192KB L1/L2 cache
  - 133MHz Front Side
  - Advanced multimedia instruction set
    - MMX™ & 3DNow!™
- **Richest multimedia performance**
  - Integrated low power AGP2X/4X graphics
    - High performance 3D acceleration, and full 2D/video acceleration including motion compensation and up to 32MB Frame Buffer*
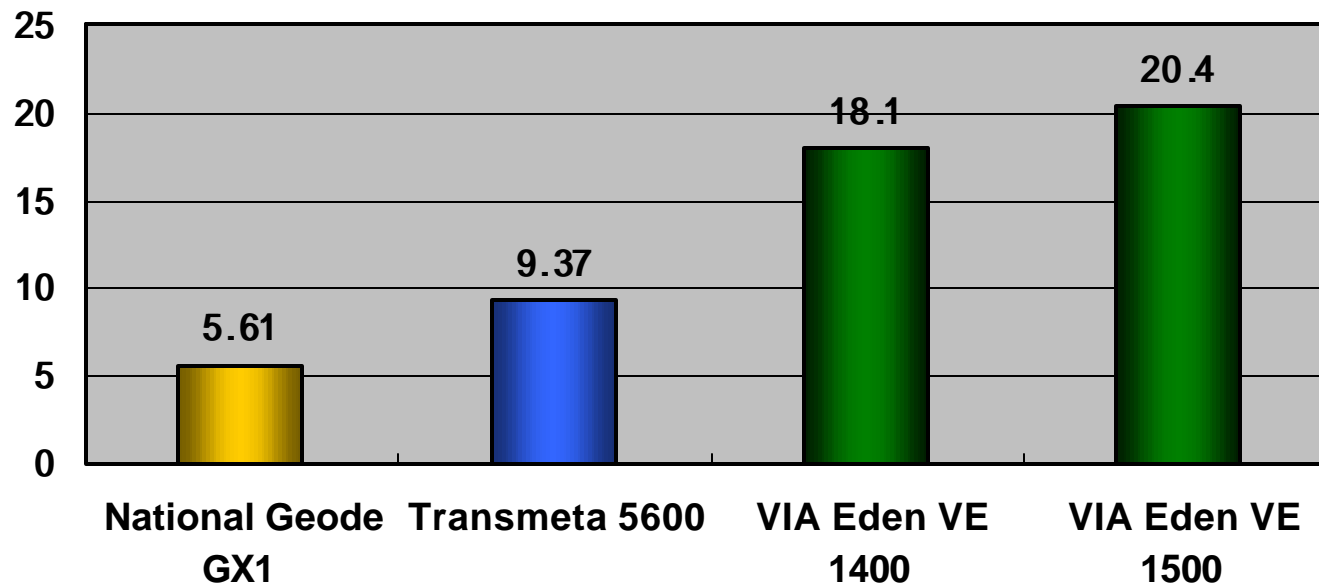
* VIA Eden ESP VE2000 Series only.

Performance Comparison

Winstone 99 Performance

Tested on Winstone 99 instead of Winstone 2001 due to speed limitations of NS GX1

* VIA Eden 1400/1500 Platform: On Chip 2D/3D AGP VGA, 8MB Shared Memory, 1024x768x16 bit resolution; 128MB PC133 SDRAM; 13.5GB UDMA66 HDD; Windows 98 SE.

** Transmeta benchmarks tested on Sony Vaio Picture Book

*** NS Geode GX1 Cyrix Media GX MMX-S 233MHz 64MB*1 PC-133 SDRAM CS5530A-UCE ,Award pos561/pos563 BIOS v1.10 HDD: Quantum 40GB AT Fireball+AS Windows 98 SE.

VIA Eden Platform Benefits

- **Ideal for full range of Information PC, Ultra Value PC and Information Station designs**
  - Robust performance for productivity, multimedia, and Internet applications
  - Optimized for most popular embedded multimedia applications
    - 2D/3D graphics
    - Digital audio
    - Digital video
      - MPEG2, MPEG4

- **Compelling solution for low cost Information Server designs such as Home Gateways**
  - Excellent integer performance

VIA Eden Platform
x86 Compatibility

- **Fully compatible with complete range of x86 Operating Systems and software applications**
  - Microsoft Windows® XP, Windows ® 9x, Embedded Windows®, and Windows® CE
  - Linux (Red Hat, Red Flag etc)
  - Productivity, multimedia, and Internet applications
  - Comprehensive driver support across all platforms
- **Leverages efficiencies and economies of scale of PC infrastructure**
  - Minimized product development & manufacturing cost
  - Rapid time to market
  - Minimized support costs

VIA Eden Platform Integration

- **Richest level of x86 embedded platform integration from a single vendor**
    - Choice of three processor cores to meet performance/power needs of target market applications
    - Choice of two integrated graphics cores to meet performance/display needs of target market applications
    - Full set of integrated connectivity, communications, and multimedia features
        - Audio, networking, USB 1.1, Super I/O, modem
    - Multiple low cost extensibility options
        - IEEE 1394, USB2.0, TV Out, Networking PHY

# VIA Eden Platform Integration Benefits

- **Lowers development costs & speeds up time to market**
- **Cuts manufacturing costs by reducing number of discrete components and minimizing board real estate**
- **Increases product reliability and longevity**
- **Delivers optimum design and configuration flexibility on a single platform**
  - Desktop & Mobile
  - Multiple price points

VIA Global Support
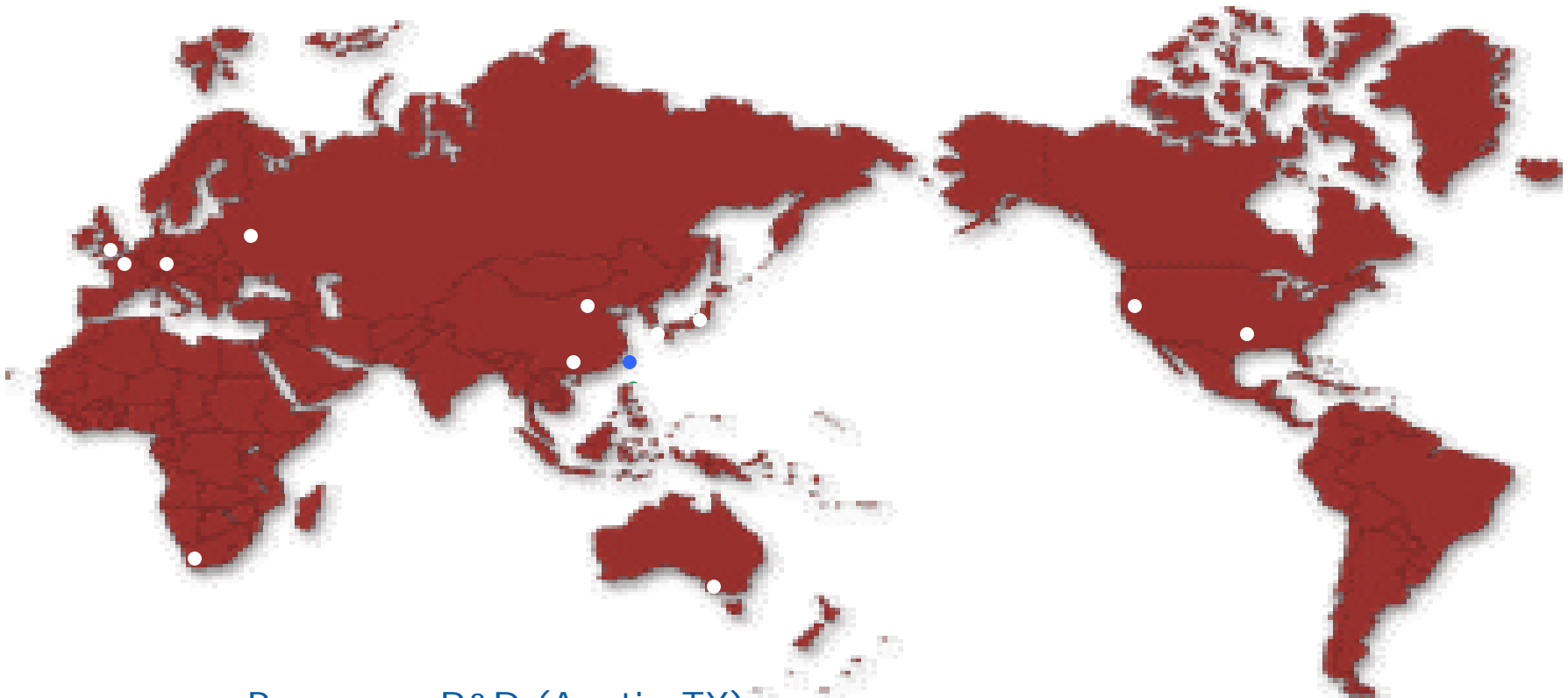
- Processor R&D (Austin,TX)
- Chipset & Graphics (Taiwan/Fremont, CA)
- Manufacturing (Taiwan)
- AE/FAE/SV (Taiwan)
- Local FAEs in US/Germany/China/Japan
- Software/driver support (Taiwan)
- Global Sales/Marketing

Product Life Cycle Management Program

- **Specially tailored to meet specific life cycle needs of the embedded market**
  - Four-year availability for key components
    - Processor
    - North Bridge, including PLE133 (8601A) and PN133T (8606)
    - South Bridge, including VT8231 and VT686B
- **RMA products after the four year life cycle management program will be handled through VIA's standard RMA procedure**

Technical Documents Available

- **Datasheet**
- **BIOS Writer Guide**
- **Motherboard Design Guide**
- **Thermal/power design guide**
- **Ballout/Packaging Specification**

Key Industry Support

"The VIA Eden Platform will allow customers to bring to market exciting new IA products with vastly superior performance that has not been possible in the past. "

- Mike Chou, Senior VP, Product Marketing Division, ECS

"VIA's new Eden solution will revolutionize the IA and embedded industry and will take the industry to a higher level."

- Paul Liu, General Manager, AEWIN Technologies Co., Ltd.

"...VIA Eden Platform is a very attractive choice for developing AVerMedia's next generation digital multimedia products that require high computational through put, rock solid stability, and low cost structure."

-J. Allan Yang, Ph.D., Chief Technology Officer,

-AVerMedia Technologies, Inc.